Disclosure

Fields of the current invention

The current invention can be considered as the second part of our work relative to motor machines, work which we'll find the first part summarized in our patent application deposited internationally as "Retro, Post, and Bi Rotary Motor Machines ", the international number PCT CA 2004 00713, and American application number 10/514,403, and of our American patent number USA 694 313 b2 , China zl01808601.2 Russia 003820 and title Energy poly inductive engine

In the first part of our works, we have shown a certain number of criteria allowing rotary machines to be realized with a higher degree of liberty, this higher degree of liberty being produced by a higher degree of the mechanical means controlling the paddle of these machine. The current invention will determine the main factors allowing the determination of the various degrees of the machine, this time obtained by new dynamic components and determinations.. In the present invention , we will show that the planetary movement of the paddle of standard rotary machine can be divided in relation with specific and controlled geometrical determinations , and that the sub movement resulting of this division will be materialized in paddle and cylinder kinetic, in specific manner that will guarantee not only the cooperation of paddle and cylinder together, but also that this kinetic coordination is also coordinate with the bloc of the machine in such a way to be able to realize the correct mechanic for the machine and determine the correct cycles of the machine, when realized as pump, engine or compressor.

For a better comprehension these new constructive determinations are explained in a geometrical way, rather than in a mathematical way. These new determination or geometrical components are called Material Figures, Figures of Displacement point, Geometric Figure, and Figure of Sequential realization of the Figure of Displacement point or of the Geometric figure. We will show that these Figure, and the various way of their association constitutes the determinations and the components of these new machines. (fig 37, 38)

Like we will show, the immediate result of the invention will be substract the well known difficulty of negative forces, and the limitation of utilizable figures in standard kinetic. Like we will see, the most idiomatic kinetic of the machine will run without any acceleration and deceleration of its compressive parts, and produce more explosions by turn, and it is why will we name these machine Turbinary machines. We will show, also, that many variations can be obtained by the mixing of the central Translational kinetic and standard one , this allowing new machines, possessing a higher number of explosions than the translational one, but keeping the translational qualities. New subsidiary groups of machines that will be created, these machines having variable ratio of translational

movement. These will be called Turbinary differential machines as well as Turbinary contrary movement machines.

In addition, we'll show that the degrees of the machines can simultaneously belong to both levels.

In summary, thus, the current invention has for objectives to complete our first works and to show that we can also restore to rotary machines, both geometrically and dynamically, degrees of realization assuring them not only a motor capacity, but also a versatility of realization and distinction of types of appreciable machines. This versatility will find its theoretical form in a vast group of conceptual criteria, which will allow us to determine any machine. This new group of machines, much more vast and answering to a group of criteria which is much larger, precise, and sophisticated, which will allow a new synthesis, much larger and including much more, which we'll express in the diverse distribution of a new variety of motor machines.

From the point of view of the commercialization capacity of the current invention, whereas machines of a mechanical and dynamic configuration of the previous art have remained confronted with important problems, and have fallen in a commercial abandon, we think that Translational Turbinary machines and certain Contrary or Differential Turbinary machines possessing a high degree of Translational movement seem to us to be a type of machine which, by its qualities, allow to consider a renewed commercial capacity to rotary machines.

Objects of the current invention

The first part of the invention will resume the art of rotary engine. (fig 1) In beginning, wee will overview the origin of rotary engine, the Wankel positive contribution, our own general works in standard machine. (fig 2, 3) We will after call back some inventions that are nearer to field of the present invention, realized by Bradov, Shwam, Wankel and us.

The second part of the current invention will make a resume of the general gaps of the rotary engine, witch the principal version to be commercialized, is the one of Wankel. We will show that none of the precedent realization is able to correctly get out of the well known problems of Wankel engine, and how the present invention will do it.

The third part will enter in the field of the present invention, and we will explain how, on the base of observations that are only possible in starting from element of our invention named Energy Poly induction engine , we will obtain and expose the Turbinary base figure, and prove that the translational paddle movement, presented at the first part of the current invention, can be, in the present invention, realized and extremely simply driven, in a bloc of the machine, in complicity with a strictly retro rotational movement of a cylinder, this original kinetic not only being the simplest, the most idiomatic and the most generative structure of the machine of the present invention, but also possessing the

most qualities assuring an eventual commercialization. Notably, we'll show that this realization is mechanically original, since it is the dynamic realization a perfect bi rotary one. We'll show in fact that the bi rotary value, which we have figuratively brought to light in our first part, in machines that we called poly turbines is also presented dynamically, under the form of the Turbinary machine with Translational movement. We'll explain the immense advantages of this type of machine and we'll generalize the horizontal support methods, allowing to assure a correct support of the compressive parts.

We'll show in addition, that the Turbinary motor machines, generally realized by coordination of compressive parts of circular and translational movement are important not only from the point of view of their specific original qualities, but also *theoretically*, since they *allow us to determine with precision a point of bi rotary cutting, this point in turn allowing the completion of a complete system of dynamics of motor machines, which we'll represent by the determinate scales.*

In the four part of the invention we will show that variable kinetics are possible between the translational and standard one. We will show the criteria permitting to difference kinetic that are containing majority of translational movement from the other, and in these high degree translational kinetic, witch one are utilizing post rotary mechanical means, producing contrary movement, not only of the mechanical means, b more, of the compressive parts.

In other terms, we'll show that the mechanical degrees which we have defined vertically in the first part, and which allow the *figurative* realization of machines of various degrees, by different and more sophisticated cylinder curves, which will also allow, when realized horizontally by means of semi transmittive induction, to differentiate *dynamically* the degrees of the machines, whether they be by translational dynamic, differential retro rotary dynamic, or post rotary, or even by specific contrary dynamic.

In summary, we'll thus show that all the advances relative to the degrees and bi rotary value of machines which we have realized on the vertical level in the first part of this work, can, from the unity of translational paddle movement machine allow us to generalize this dynamic and elaborate the complete plan of these machines, this time from the dynamic and horizontal point of view. We'll achieve this work by demonstrating that these two levels can be realized in a same machine.

The group of these dynamics will allow the constitution of a complete system of motor machines, including scaled ranges, and a complete ensemble of criteria allowing us to define any machine.

Recapitulation of the previous art, before Wankel

We can summarize the period previous to Wankel to works relative to motor machines, mainly rotary like the period in which we have progressively discovered a group of paddle and cylinder configurations, allowing the planetary displacement of these paddles in their respective cylinders.

The base figures have been discovered by a group of inventors, being Fixen, Cooley, Maillard, and many others (Fig 1 a) In general, the machines invented by theses inventors were of retro rotary type. The number of sides of the cylinder was superior of one side to the number of sides of the paddle. The particularity of theses machine were that the extension, in a certain sense, of the paddle, was realized in the same time than the on f the crank shaft. This was producing a double extension of the compressive part Btu to realize this kind of machine, it was necessary to put the rings on the side of the cylinder, what was creating enormous problem of their durability.

Part two: Wankel's contributions

As we have mentioned in our previous works, Wankel's contributions can be classified in three main categories, being

1) That of historic indexing
2) That of mechanization, and finally
3) A paddle segmentation, and a serialization of these new figures

Wankel's contribution through historic indexing

The consultation of Wankel's main patent, titled *Eintellung der rotationskolbermachinen . Rotations kolbenmachinen mit parrallelen drehaschsen unt arbeitshramumwandungenaus starrem werstoff* numbered xb02204164 allows to take knowledge of the faithful exposition by Wankel of the state of motor knowledge of the machines of his era and of the previous one.

To say truthfully, *many of these machines, and even the great majority, remain however non-mechanized, and in addition cannot be mechanized by using strictly the two induction methods proposed by the inventor.* This is why here we will only consider the machines which can be mechanized, in other words, in which the motor parts can be mechanically supported. The mechanism part of Wankel invention is very thin .

Rationalization of figures by Wankel

Wankel's most important theoretical contribution is admittedly to have organized the initial figurations of the previous art in such a manner so that the segmentations can be realized in these new machines not in the cylinder corners, but rather on the points of the paddle. Afterwards, Wankel, to the image of Fixen and Cooley, realized the series of these machines, retro and post rotary. These logical serializations similar to machine figures of the previous art, have allowed the grouping of machines in two categories, which we have previously named retro and post rotary, according to their paddle, which when observed by an exterior observer, displaces itself in either the same direction as its eccentric, or in opposite direction. (Fig. 1b)

The second part of Wankel's rationalization consists in specific serialization of each of these categories, serializations allowing to rationalize the ratio of the number of paddle and cylinder sides of each of these categories. Wankel thus enacts the rule that, according to which, retro rotary machines have a number of paddle sides inferior by one to that of their respective cylinder, whereas post rotary machines have a paddle side superior by one to their respective cylinder (Fig. 1b)

Mechanization

Wankel's theoretic contributions wouldn't be very well known by today's general public if it wasn't for his mechanical contributions, which resulted in the autonomous paddle support in relation to their respective cylinder, and consequentially, to cut back undue frictions of the paddle on the cylinder, resulting in a premature segment wear.
These types of mechanical support are limited in Wankel's method to two. These methods being mono inductive and intermediate gear support. (Fig 1 c) Mono induction is the type of support generally used in the industry.

Variants

The only dynamic variant for which Wankel provides support methods is the variant by double rotational action. This variant is still useful today in the production of pumps. Wankel provides two support methods for this variant. (Fig. 1 d) (Wankel 2, 988, 065)

Mechanization by mono induction and by intermediate gearing and triangular paddle

It is to be noted from the start that the crankshaft in rotary machines, but mostly retro rotary must be realized with a very small dimension to allow the realization of an acceptable compression ratio. In the same way, the more the number of paddle faces and cylinders of the machines is high, more their eccentric is small. It's for this reason that the industry has concentrated almost exclusively on triangular paddle post rotary machines.

As for mechanizations proposed by Wankel, in the mechanization by intermediate gear, it proves harder to realize the segmentation, and to realize the paddle positioning with complete exactitude. The industry has thus very limitedly recognized the method by mono induction as a liable support method allowing a commercial realization of this type of machine.

Other works : Wilson, St-Hilaire , Beaudoin

The opacity and the rigor of Wankel's system have made later conceptual developments difficult. The rational organization of the motor machines comprises of but a few rationalization criteria, characteristic machine distinction criteria, which has made conception not only narrow, theoretically but in addition, insufficient and erroneous in many areas, notably that of analytical perspective, and those relative to the character of compressors and machine engines. The excess of purification of the components by Wankel created a loss of a great part of the rotary capacities of the machines. Among the works after Wankel's, in significant contributions relative to motor machines, we must note the contributions of Wilson (1975) and St-Hilaire (2001) and Beaudoin (2001). The first shows that we can realize a motor machine in which the paddle will be a flexible group of paddles, which we have named paddle structure. The second uses this paddle structure as a support structure to a set of superior paddles. Neither of these inventors was in measure to suggest adequate support methods for these machines We have developed several new ways to create mechanical elliptical movement, which is able to support the paddle structure. (fig 1 e)

We have abundantly shown that these machines constitute second and third degree machines, and that they can, as first degree machines, be serialized. We have also shown that the same mechanics of first degree machines, but this time combined could allow the support of its compressive parts.

Very concise summary of the preliminary course and of the current work

Initially, as many researchers, we have stated that the rotary machines, especially when they had their compressive parts supported by conventional support methods, producing a lot of friction, which is the direct consequence of contradictory pushes on the paddle. We thus have in a first time proposed many new support methods allowing to counter these difficulties, such as, the methods by poly induction, by hoop gear, by central active inductions, by semi transmission and so forth.(Fig 2) These are mechanical induction methods are the following: (fig 2,3)

- by poly induction
- Method by semi transmission
- Method by hoop gear
- Method by intermediate gear
- Method by heel gear
- Method by internal juxtaposed gears

- Method by internal superposed gears
- Method by central post active gears
- Method by gear-like structure
- Method by unitary gears

We have noticed that the mechanical deconstruction realized during the expansion was more interesting in retro rotary machines than in pot rotary machines. In the goal of profiting this important advantage, we have abundantly worked to correct the weak point of these machines, by trying to show apt methods to increase the compression of retro rotary machines. To realize this, we have been brought to understand that it was necessary to correct the course of the paddle and the curve of the cylinder in such a manner so that if it is inserted less deeply in the corner of its cylinders and deeper in the sides. Progressively with this work, we have interested ourselves to paddle structure machines, in which the first compressive structure has been realized by Wilson. We have noted that the cylinder curve of this machine was specific in what it comprises of on both the retro rotary aspect and post rotary aspect, which was corroborated by various mechanical support methods which we have produced to support the parts. We have concluded that, in addition that certain machines by their very nature have a superior degree of proven rotary liberty by a superior number of rotary structures. We have thus shown that the mechanics of these machines could then be applied to retro or post rotary machines, which confers them a higher mechanical degree, a more subtle cylinder figuration, and finally, a partially bi rotary character. These methods have thus allowed to increase not only the compression of retro rotary machines, but also to increase the couple of post rotary machines. The main realization methods of bi rotary liberty have thus been that of the addition of a geometric rod, of polycammed, layering, and poly induction gears. (Fig. 5.1)

The reasons of the obtained results, as much in the retro as post rotary machines consisted in that of which we give these machines their bi rotary value back, the number of mechanization degrees allowing their correct motor capacity.

The difficulty in realizing these mechanical layering had then brought us to propose other original realization solutions for bi induction. The poly induction allows in fact to realize horizontally the cutting which we have produced. We have also gone further by showing that the bi rotary value could be realized both horizontally and dynamically, by the realization of paddle machines with clockwise movement, which must be considered, as we'll show in the present work, when this movement is coupled to a strictly rotational movement of the cylinder, as the most important theoretical expression of Turbinary machines.

Kinetic works field : Wankel, Schwam, Bradov, Beaudoin

In the present invention, we show, in the bloc of a machine, that a compressive part of the rotary type may be driven in complicity, and, what is just as important, the specific rules

and determinations of the complicity of their kinetics in relation to the bloc, which will assure coordination of their coupling movement to exterior elements such as valves et electricity conducting.

Before us, some inventor tried to suggest the possibility of complicity of cylinder and paddle utilised as dynamic compressive parts. First, we have to recall the works of Wankel (US 2,988, 065) . As we said before, this kinetic figure is also in xb02204164 , In this work, Wankel is putting in relation to the strictly rotational element, piston and cylinder, what is not reducing the difficulties of the standard rotativo engine, but to the contrary is adding them. For example, this kinetic process is making the dead point longer, is making the expansion process more round, and is reducing the number of compressions per rotation, for a trochaic piston, to one. All this means that the friction will be superior, and the thermo dynamic results inferior.

We must also say a few things about the Schwam invention. Schwam (US 6, 761, 144) intends to produce, around a central rigid piece fixed specifically on an airplane, compressive parts of the rotary type, each of these comporting a motor axe able to drive an exterior propeller. First, it must be said that the organizational determinations of this engine is very specific to the airplane, and it will be extremely difficult to realise commercialisation of that kind of machine. Schwam is proposing that the two motor axes of the machine will run in contrary motion, one in relation to the other. But Schwam don't definite any particular kinetic of the compressive part that would permit to realise this movements. Like we will show, it is absolutely necessary to definite the way by witch the compressive part will cooperate, and simultaneously, their way they will cooperate with the bloc of the, machine, what is absolutely necessary to control the cycle of the engine, the ratios of the mechanical induction and the position of subsidiary elements. Schwan is important to note that he never identifies, nor specifies the determination that are making possible the control of that contrary movement in relation to his central support element. In addition, to obtain, which is the objective of Schwam's work, the advantage of inertia movement of the propeller, it would be necessary that the motor axe which is driving them would be running at the same speed. Thus, this un-exposed relation of contrary movement of equal speed is not only very specific, but also impossible. It is in fact, impossible to obtain equal movement of the part and simultaneously the same speed for complementary part As we will show, like wise movement is the limit of contrary movement, and in this movement, the cylinder is simply running at half of the speed of piston shaft. The Schwam is by one side not a good construction of an engine, of witch it would be possible to realise general applications. One the other side, the identification and the specification of the movements Schwam intend to give to the compressive an mechanical parts of the engine is not sufficiently definite. No specification are given to assure cooperation of compressive parts together, and what is as much important, their cooperation with the central support.
General organization of the engine will also produce extreme difficulties of realisation of the mechanism, of the compressive part, ant the realisation of subsidiary components.

On another hand, we must also mention something about Bradov's invention. The first objective of Bradov's invention (RU 2140018) consists in a proposal for a new method of support of the piston in a rotary engine, that would permit to realize the machine with a superior degree of liberty. The method of control of the motion of the piston invented by Bradov consist in a assembly of curved pieces, which the forms are looking like piston and cylinder of standard rotary machine, witch are fixed to the piston. This assembly is called, by Bradov, a synchroniser. This method of controlling the piston is utilised in all the figures of the invention of Bradov. We don't think that this method of degree elevation is interesting. Superposition of crankshaft, or polycamed gearing, like we developed earlier seems to be really simplest for the commercial realisation. By another side, Bradov is giving very little indication about contrary motion of mechanical parts of his assembly. Like Schwam, speaks of possibility of realising its machine with a dynamic cylinder, but like Schwam to, his purpose on that subject is very un precise. Bradov speaks of contrary movement, but it is very easy to produce contrary movement of certain mechanical part, when these are at a superior level of liberty. Bradov never realise some kind of this possibility in lower degree of liberty, what is needing really more precisions. So, we never have, in Bradov, low degree of contrary motion of cylinder and crank shaft of the piston. We never find in Bradov indication for contrary motion of cylinder and piston. It has to be said to, that when cylinder and piston are dynamic, cylinder and crankshaft of the piston are always running in contrary direction, when the cylinder and piston are travelling in the same direction, or contrary direction. But, in Bradov's invention, these are between the piston and the elements of the synchroniser. No kinetic never showed by Bradov, and , like Schwam, he never proves the relation of these movements with the bloc and with the exterior of the machine, meaning that any guarantee of the pertinent cycle will be attributed to the machine.

It has to be noted, to resume that no contrary movement, simply of eccentric and cylinder, have bean made, by Bradov, a basic degree of liberty . In basic degree of liberty, same direction compressive part , and contrary direction eccentric and cylinder part always need retro rotary mechanical support, what is producing , like we will see , differential machine having no power. No contrary movement of compressive part had beau made by Bradov, in any superior degree of liberty. Bradov is showing no figure that are not realizing synchroniser.

In Poly Induction Energetic Engine, (American patent number USA 694 313 b2, China zl01808601.2 Russia 003820) we have shown that it was possible to support the piston of a rotary engine by the addition to a master crankshaft , of subsidiary crankshafts, what as proving it was possible, in contrary of what is happening in standard mechanical control of rotary engines, to realize the movement of a piston of a rotary engine by the addition of subsidiary movement. This division of movement was new, but, at this time, these were realized materially by the crankshaft. We will show, in the present invention , that it is possible to keep the exact the same division of movement, but make the realization , for the piston, and for the other part the cylinder, of what is a new kinetic, and organizational figure of motor machines.

In our earlier works, (WO 01/69061 , WO 03/098006 , CA 2,386,355 , WO 2075118 a1) we also submit three degrees of liberty between compressive part of an engine, but we have never been able to realize the idiomatic, simple and generative figure that constitutes the base of variation of all kinetic figures that we found in the present work. (fig . 4.2) Finally, we never before explained the total organization , in a bloc , of the element, we never gauge the specific characteristic of the mechanical supports which are necessary to realize the machine functionally, and we never establish the determination which makes possible the kinetic control of the coupling of piston and cylinder in relation to the bloc of the machine, all these elements assuring the proposal for the machine as truly efficient and complete, being realized in the present work (fig 4)

General gaps in Wankel's system

Central anchoring, and non pertinent mechanical inductions

In some of the rotary engine of the art before Wankel, the piston itself was running in a cylinder, in a manner that the piston was anchoring itself on the cylinder. The correct result of that was that the anchoring was situated away from the center of the machine (figure 6) But, this was creating big segmentation difficulties.

The positive effects of Wankel's new segmentations have allowed a paddle segmentation, and a softening of the cylinder shape, which has had for effect to minimize the use of segments. In addition, the main negative effect has been to realize the explosion on a single horizontal paddle, and not a rectifying paddle, as it was in the machines of the previous art. The price to pay to secure the segmentation has thus considerably diminished the amplitude of the extension, reduced in Wankel machines to only the extension of the crankshaft.

In addition, it is evident that the realization of these orientationnel support methods has lead to other difficulties, which are almost just as important, theoretically and mechanically.

Wankel's most important gap: centralization of the anchoring resulting in contradictory pushes on the paddle

The consisting element without objection the *major difficulty of all rotary machines, when the orientationnel action of it is realized by one of Wankel's methods, in other words, in the center of the machine,* is admittedly that of the contradictory push of the explosive power on the paddle. By contradictory push, we hear on one part that a part of the paddle has a mechanical induction not only opposite to the other part of a same paddle, but also opposite to the system of the machine.

In rotary engines of the art previous to Wankel, we arrived to realize a push, but unequal on the whole surface of the paddle and consequentially an appreciable push effect on the crankshaft. The crankshaft and the paddle participate by realizing their compressive action to the mechanical action, the extremity of the paddle realizing a certain *anchoring* in the cylinder and would allow a lever action of the paddle on the crankshaft. Unfortunately, such a procedure would make the commercial realization of these machines difficult, since mechanical parts realized confoundedly with compressive parts result necessarily in premature wear.

Wankel's methods: inductions by mono induction and by intermediate gear, more explanations

We can say that the anchoring, in rotary machines, is the equivalent of the rod effect in piston machines. *We can thus confirm that the displacement of the anchoring of the exterior towards the center of these machines produces a similar effect, if not worse than that of the cutting back of the rod effect by realization of the runner transmission previously demonstrated in piston engines.*

In fact, by anchoring the aspect of the paddle in the center of the machine, we *divide*, necessarily, this said paddle in two parts which will realize the push of the explosion contradictorily, in opposite direction. The pushes on each of the paddle parts will thus be contradictory, and this will translate by a reduced push on the crankshaft, since the push on it will only be the difference of the contradictory pushes.

In the case of a mono induction machine, which is Wankel's first support method, the back of the paddle with undergo a negative push whereas the front will undergo a positive push. produce the majority of its effort in this region.

To the contrary, in the case of the application of the method by intermediate gear, it's the front part of the paddle which will realize a negative push, and the back part which will realize a positive push. (Fig 6 b)

The two kind on mechanical induction are proving, by their effects that it has to be possible to find a mechanical mean or dynamic that will be able to realise positively, in the same machine, positive effects on both sides of the paddle, what is one of the purposes of the present invention.

We can summarize by affirming that Wankel's first gap consists in an excessive lowering of the number of machine parts. This lowering allows realizing the machine in its compressive nature, but not in its motor nature.

This affirmation comprises itself in regard to the example of piston machines, previously presented. In the piston machine with a runner rod, rod and pistons are realized

confoundedly. There are but two constituting elements of the machine which remain, being the compression part, realized by including fixedly the binding and mechanical parts. The machine will be powerful in *compression*, but will be of lesser performance when used as an engine. The way to confer the power will be to restore the binding part, the rod, in a distinct manner of the piston.

We must state in a clear manner that the centered realization of the anchoring in rotary machines is equivalent to the subtraction of the rod itself. When the rod is realized confoundedly with the piston, the machine is deprived of its rod effect. A similar loss is realized when the anchoring of the machine is brought to the center.

On the other hand, we showed in our previous work that it was possible to neutralize the subtraction of the connecting rod effect introduced by Wankel, by constructing the machine , for example by superposition of crankshafts , by polycamed gearing, in a higher degree of liberty. But we realized that , generally, these solutions were making more vibrations in the machine, and also that , these were making the need of construction precision of the machine higher, what was reducing the possibility of their commercialization. This is why we have organized the degree of the machine, this, time horizontally.

Part three

Poly induction and Turbinative engine : Construction of the invention: comparison of different points of observation

We have abundantly worked on the notion of poly induction. To better understand not only the originality, but the reach of the notion of poly induction, and this, not only from the mechanical point of view, but in addition to the conceptual level, we must make room for a *comprehension of rotary machines from the point of view of the observation.*

As we have said previously, *the cylinder forms of rotary machines as well as their strictly positional support have appeared before the elaboration of various types of paddle guiding.* Consequentially, we can say that in the domain of rotary machines, the experience and practice have preceded theory. Starting in fact from paddles simply supported by an eccentric and set up in a cylinder, we proceeded to one of two types of observations, observations which have previously allowed the mechanical composition assuring in addition the autonomous paddle orientation.

Types of observation

We must necessarily think that to obtain the mechanical result by mono induction and by intermediate gear, we needed to proceed to the observation of the paddle from two different points of view. We'll say that the first type of observation is an observation from an absolute point from the exterior of the machine, (Fig 7.1) and we'll say that the

second observation is dynamic and interior, since it can be realized from a hypothetic observer positioned on the crankshaft in course of rotation (Fig 7.2)

Observation by general exterior observation

In the first type of observation, said by absolute exterior observation, we suppose an observer located on the outside of the machine and observing the displacement of the paddle and the crankshaft. In post rotary machines, the observer will note that *the paddle acts in the same direction of the supporting crankshaft, but slower than it.* Inversely, in retro rotary machines, the observer will note that the *paddle acts in opposite direction of rotation of the supporting crankshaft.* It's from these observations that Wankel must have built his first mechanics, which we have named induction by mono induction.

In the case of post rotary machines, the necessity of producing a slower paddle movement than that of the eccentric has been realized by the use of a reducing paddle induction gear, being of internal type, coupled to an external support gear. In the second case, in other words, of retro rotary figuration, since the paddle must turn in opposite direction than that of the crankshaft, the paddle gear is of external type, whereas the support gear is of internal type, which will force a sufficiently accelerated retro rotation of the paddle so that the observer can notice, observing its opposite movement in relation to that of the crankshaft (Fig 7.2)

Observation by positioning on the crankshaft

The second type of observation gives birth to all other first degree mechanics, including Wankel's mechanic by intermediate gear, as well as our first degree mechanics, which are for example by semi transmission, and by hoop gear and by central active gear.

This type of observation is possible if we suppose that an observer is positioned on the machine's crankshaft and compares the direction of its own movement to that of the paddle. He will state that to the contrary to what goes on in the first case, *the paddle always acts in counter direction of the crankshaft.* There is no contradiction between the two observations. In fact, even if the paddle always turns in opposite direction of the crankshaft, its retro rotation speed varies depending on if it is a post or retro rotary machine. Thus, if its retro rotation speed is inferior to that of the crankshaft's rotation, as it is the case in post rotary machines, the exterior observer will continue observing that the planetary rotation is realized in the same direction of the crankshaft. In addition, if its retro rotation speed is superior to that of its crankshaft as it is the case in retro rotary machines, the exterior observer will continue observing a movement opposite to it in relation to the crankshaft.

We can deduce these assertions, that the mechanics to be constructed from an observation on the crankshaft, will not directly search to realize an action in the same or opposite direction of the paddle, as it is the case in the first observation, but a rotation in opposite direction to that of the crankshaft, but with different speeds however, thus realizing post

or retro rotary machines It has to be noted, to, that , when an observer is situated on the crankshaft of a standard rotary machine, this observer will see piston and cylinder acting strictly rotationally, what is the Wankel realization that we discussed earlier, and witch is realizing strictly on compression by turn.

Once again, for example, Wankel's induction by intermediate gear mechanically produces this observation. The paddle is activated not in a direct relation to the body of the engine, but by means of a gear set up on the crankshaft, in such a manner to be activated by its relation to it.

As we have already mentioned, mechanics by hoop gear, by central active gear, by semi transmission, and many others of our conception are mechanical implementations issued from this same perspective and observation.

It's from these types of observation that we were able to construct the resulting mechanics, which we can name first degree mechanics with forward prominence, and first degree mechanics with backward prominence, depending on if it's the front or back part of the paddle which produces the push, the opposite part producing as we have already shown, a counter push.

Exterior observation of displacement points : Figure of displacement points

A third type of observation can be realized and this type of observation will be the rational source of realization of poly inductive mechanics, and will be of a great importance in the actual work. In this type of observation, it's the case to realize an observation from a fixed exterior observation. However, here, it is not the case to observe the movement of the paddle in general, or even to compare it with that of the crankshaft, as in the case of the first type of observation. Rather, it's the case to observe the course of various points of the paddle for a rotation. We'll name this type of observation dynamic (Fig 7.2).

This observation will allow the realization that all point located on a line starting from the center of the points of the paddle traverses *the caricature form of the cylinder in which it saunters.* Secondly, this observation will allow to state that all point located on a line uniting the center of the sides to the center of the paddle traverses a form similar to that of the cylinder, *but this time in its opposite direction.* The observer will then notice that the points of the two shapes are always of equal distance between each other, which will allow the connecting of a rigid paddle to mechanics realizing these two points.

From this observation, we'll thus realize in combination two planetary mechanics working oppositely, which we'll name poly induction.

Original and foundational theoretical aspect of poly induction (American patent number USA 694 313 b2 , China zl01808601.2 Russia 003820 and title Energy poly inductive engine)

Once again, the method by poly induction is much more than a support method. It is in a way a geometric-dynamic comprehension completely contrary to that of thinkers of the previous art of which, Wankel himself. In fact, for Wankel and his predecessors, the geometric realization of all cylinder form is produced by subtraction of movements, in other words, a rapid central movement, that of the crankshaft, and a slow exterior movement in opposite direction, that of the paddle. As we have seen previously, there is confounded inversion and realization of the mechanical parts. The subtraction of these movements realized by the central eccentric and the paddle produces the curve of the cylinder

Thus the poly induction shows that the production of the curve of the cylinder can be realized totally differently by the *additive and not subtractive* manner of realization, *of two positive movements,* the first movement, the master movement realized by the central crankshaft, and the second, secondary movement realized by a subsidiary crankshaft. In addition, the slow master movement, is this time realized in the center of the machine, and by the crankshaft and not in periphery in a confounded manner with the paddle. (fig.8)

In addition to realizing the compressive, binding and mechanical machine elements in a dissociated manner, the poly induction shows without a doubt that the cylinder curve can be realized by the sum of two positive circular dynamic actions and not, as in the inventors of the previous art's case, by the sum of contradictory actions.

But there is much more to consider. As we'll see further, the type of movement dissection in sub movement realized by the poly induction will allow to realize on this foundation a new dynamic organization of the most important and determining, as much mechanically as theoretically, being the *rotativo-circular clockwise paddle movement* dynamic organization.

Third part

Horizontal reintegration of the rod effect: translational movement /rotational cylinder
Turbinary machines

Figure of displacement points realized by an observation from the master crankshaft of poly inductive machines and realization of bi rotary translational machine movement (fig18)

In the present section we will show that new types of observations will be relevant, types of observations which are made possible by the mechanical realization of the method by poly induction.

In the last section, we have shown that it was possible to create new kinetic, and new mechanical construction starting from the observation. In fact, we have shown that the

observation of the paddle and the cylinder by an observer that was situated on the crankshaft of a standard machine would permit to visualize and construct a machine with paddle and piston strictly rotational, witch will be realized, later, in stopping, or in subtracting the crankshaft of the machine. We also saw that in looking to different point of displacement, we have been able to create the new mechanic of poly induction.

In the next observation, we will try to visualize what would see an observer that would be situated on the master crankshaft of a poly induction machine. In the present section we will show that new types of observations will be relevant, types of observations which are made possible by the mechanical realization of the method by poly induction.

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In the next observation, we will try to visualize what would see an observer that would be situated on the master crankshaft of a poly induction machine.

In poly induction machines, the rotation of the master crankshaft corresponds to a rotation equal to the relative speed of the paddle. We suppose, in this type of observation, an observer positioned on the master crankshaft, and observing, as in the previous cases, the behavior of the cylinder, of the paddle, and in addition, the subsidiary crankshafts. We must deduce that even if for us, exterior observers, this master crankshaft is in rotation, for the observer being positioned, given the constant speed, the reference frame will give much different results. In fact, the observer will neatly see the components of the circular rotary clockwise paddle movement in its entirety.

In fact, considering the paddle movement, the observer will state that its positional rotation movement is circular, and in addition, that the immutable orientation aspect, in other words that its orientation doesn't vary, despite its center's circular action. Similarly to the hands on a watch which turn, the numbers always remain at the same angle, being perpendicular. This is why we have named this specific paddle movement, *Translational* movement.

Inversely, when the observer will direct his regard towards the cylinder, he will no longer perceive it as we do from the exterior, as a fixed element, but rather as a rotational element activated in opposite direction of the paddle's circular positional movement. The observer will thus be in front, virtually, of the first expression of the bi rotary rotativo circular machine, the clockwise paddle movement/rotational cylinder machine. (Fig 9, 10) Another construction allows the realization of Translational movement, and to

demonstrate fully that it is fully issued from poly inductive cutting back, unknown to Wankel and his predecessors, is to enclose the crankshaft of a poly inductive machine, for example in a vice and to activate the remaining elements. We'll thus see that the paddle produces very exactly the Translational movement and that the cylinder produces the contrary rotational movement. (Fig 9,10)

Finally, the result of the crankshaft observation will show exactly and specifically the simplest and most idiomatic kinetic of Turbinary motor machines , which will be composed of a translational paddle motion , combined to a strictly rotational movement of the cylinder. (This observation will not, at this stage reveal a differentiation between the cylinder and the body of the engine, and, evidently, these parts do not have to be differenced in the final machine.

Concrete realization of the Translational/ rotational basic and elementary Turbinary machine

The Translational / Rotational realization of the machine will be produced when we'll realize in a material manner the observations of the previously positioned observer.

There emanates from these explanations that the most concrete evident realization of the machine will be issued from a re dynamical realization of the same mechanic which produced it. We can in fact imagine, starting from this observation that since the crankshaft is without movement in relation to the observer it will be immobile, and could consequentially be realized confoundedly with the side of the machine. The secondary crankshafts will be provided with induction gears and will be set up in a rotary manner in the side of the machine. They will be reunited by a means such as a third gear, assuring the similarity of their rotations. The paddle, which will be set up on these crankshafts will consequentially realize a strict circular movement, without movement, being a said Translational movement. The gear uniting the induction gears will be the dynamic support gear, and will be coupled to the cylinder, which will assure the retro rotation. (Fig. 11,12) The same procedure could be realized for retro rotary machines, but by using an internal dynamic support gear. Note that the clockwise movement machines with post rotary figurations realize a contrary movement of the compressive parts, and machines with a retro rotary figuration realize, when set up to the initial degree, a movement in the same direction. We'll come back later on these types of criteria of the most important for the motor machines.

Specificity and originality of the translational movement of the translational / rotational Turbinary dynamic

If we pursue the comprehension of motor machines such as we have started, we'll realize that the Translational paddle movement machine, completed by a strict rotational movement of the cylinder, is original and important, and this for many reasons, as much

on a mechanical level as theoretic. We will see that when the motor axe is fixed to the cylinder, the machine, in four cycle, realize three explosions by turn, what is the equivalent of a three cylinder rotary engine, or to a six standard piston engine. This means that this machine particular variation of Turbinative figure is the simplest machine that can be created. This particular is machine totally correcting all the faults and gaps of rotary machines of the previous art, and this is understandable since they exceed the normal machine categories to realize both piston and turbine machine qualities. As we'll demonstrate further, the specific Translational movement can be obtained by a group of important mechanical combinations. However, the previous realization, by fixed poly induction already allows an understanding of the following. The movement has the following major mechanical and theoretical advantages. (Fig 13,14)

A) The machine, *contrarily to all machines of the previous* art, is, dynamically, perfectly bi rotary. In fact, as we can note, the paddle has no rotation. It is neither post nor retro rotary. It has a de-rotation in relation to the crankshaft very exactly located between post and retro rotary de-rotation. It thus has a similar nature not to that of rotary machines of the previous art, but rather to that of poly turbines. By its nature, it will always need in fact two inductions to correctly activate the parts. Consequentially, the machine realizes, *contrarily to all machines of the previous art*, no counter push on the paddle. Similarly and in the same manner, superior to that of a piston, *the push is realized not only on the totality of the surface of each paddle face, but also perfectly distributed to each side support points for their mono inductive poly inductive support* This characteristic allows once and for all to advantageously compare the push of rotary machines to that of piston engines. The machine, *opposite to all rotary or piston machines from the previous* art, and similarly to turbines, *the clockwise paddle movement, as well as the mechanical parts produce no acceleration or deceleration of any of the parts.*
B) The machine distributed the layering of the poly induction or of the layered inductions, this time horizontally, which cuts back all machine vibration
The cylinder curve will lead its strictly retro rotation, and this retro rotation will realize an effect similar to that of the rods in the piston engine, and an additional force to the machine
The parts restore horizontally the minimal number of constructive parts allowing to realize the machine in its motor nature
C) The paddle and cylinder posses a specific contrary movement, which we find at no location of the previous art, except in our simple induction machine realizations, realized with pistons, and tumbler pistons, in a specific speed of one in relation to the other, with is equal to the ratios of the poly induction gearing, for the standard machine constructed with this mechanical mean.
D) The expansion of this machine is realized perfectly vertically , what is more compatible with the explosion

The Turbinary engines with Translational paddle movement is dynamically coordinated to a strictly rotational movement of the cylinder, comprise both, qualities of piston

engines, rotary engines, and orbital engines and of turbines, all while comprising but very few of their respective faults. (fig 14)

In fact, if we compare these machines to piston machines, we see that the paddle of these machines accepts an equally distributed push as in piston engines. We see that all point of the paddle and, consequentially, of its surface, travels at the same speed. In a certain manner, we can even say that the push is superior to that of piston engines, since the paddle, being directly connected to the crankshafts, renders the rod's angulations inexistent. It will result in an absence of friction and of energetic expense caused by the negative counter pushes.

In addition, if we compare these machines to rotary machines, we see that they can use the same figurations, and consequentially realize closed combustion chambers. In addition, the rotational aspect of the parts can allow the use of light valves.

In fact, the position of the valves may be exactly on the same place on the cylinder, on the sides of it , or on the periphery , and as we will show in the next page, the exact determination of were the valve are, at any time during the evolution of the compression parts will allow the constructor to correctly definite the emplacement of the admission and exhaust holes in the bloc of the machine.

Finally, if we compare these machines to turbines, we see that as in turbines, except when they are realized with the help of polycammed gears, all the parts with no exception travel at a constant speed, and there is absence of acceleration and deceleration of all compressive or mechanical parts.

It is therefore a type of motor machine located at the confluence of totally different motor machines of the previous art, which recovers the most essential qualities of each of them but recovers but a few of their faults. The push should give them the power, the figuration a minimal number of parts, and the rotary velocity and longevity which is maximal and unequalled in all other motor machines (Fig 21).

We must state that the geometric dynamic of contrary poly induction, as we have shown Wankel's, is the dynamic which allows a just and valid cutting back of movements entering the composition of the paddle's planetary movement, in two specific movements, and then, to restitute them horizontally by the clockwise/rotary cylinder dynamic.

If our reasoning is founded, this allows us to now answer the interrogation which we have previously left suspended. We have in fact shown that Wankel's and the thinkers from the previous art's geometric conceptions have been inversed the composition of the parts by setting up the crankshaft confoundedly with the paddle, peripherally and in planetary way , which deprived the machine of all its motor substance. We have then restored a, so to speak, "piston" vision of the machine by realizing it by master and secondary crankshafts, by asking ourselves if it really is the most pertinent set up.

To the light of what we have just shown, it appears that the most pertinent set up consist in realizing the machine horizontally, by realizing the crankshaft confoundedly, this time around, with the cylinder.

As astonishing as it may seem, thus, whereas the least pertinent set up for piston engines is that of the rotor cylinder, it turns out to be the most pertinent for rotary machines.

Section four

Translational movement paddle machines and general Turbinary machines: generalization

In the next section we will apply ourselves to demonstrate that Turbinary machines constitute a specific determined type of machine, to realize, so to speak, motor machines horizontally, by opposition to the vertical plan which we have demonstrated the existence of in the first part.

To do this, we'll show mainly that Turbinary machines can be produced with all the existing inductions, in the measure where we specify not only the notions of semi transmissions, ascending, and descending inductions, but also, in the measure that , with the help to new geometric component, like the Geometric Figure, the figure of displacement, and the figure of Sequential realization, we specify the ratio and the preferable type of them.

We'll then show that they can receive all types of standard machine paddles. We'll then show that they can establish different realization degrees dynamically. We'll then show that a correct comprehension of these machines requires the distinguishing of their Material Figures, the Figures of displacement of the points in relation to the bloc, the Geometric Figure of the top of paddle positions, and the Sequence of realization of the Geometric Figure , or of the figure of Displacement (~~virtual, and real aspects~~). We will show that these figure are geometrical component that are absolutely necessary to specify the coordination of the compressive parts together, but also in their specify and strict relation to the bloc, what will permit to organize not only the exact ratios of mechanical induction, but also the good establishment of the cycle and the position of all the subsidiary element of the machine, when realize as engine, pump or compressor. Finally, we'll show that the group of these generalizations will allow us, by the combination of two horizontal and vertical plans, to produce a global and logical synthesis of criteria, which will be pertinent to all motor machine.

More specifically, we'll make matter of the following points:

Mechanical generalization

In this section , we will show that the mechanical mean by witch, in the first realization of Translational Turbinary engine , is the more comprehensive mean, but that the control of compressive part may be realized by many other mechanical ways, witch can be resume as following :

a) Mechanical movement realized by central induction
b) The methods by semi transmission by considering them as an induction transferred from center to center, said horizontal induction
c) The methods by ascending, descending, and horizontal inductions
d) And we'll show that the layered induction combinations can be produced horizontally, and allows the support of the compressive parts of rotativo circular machines

Figurative generalization

In this section, we will show that the Turbinary compressive parts, witch we call the Material figure of the machine, are the same than the one of the art of rotary machines. This section shows that all Turbinary machines possesses all the variants of all other machine, knowing if it is applicable

a) As applicable to post rotary machines as retro rotary
b) That they apply to machines with all numbers of sides
c) That they apply to bi rotary machines, such as poly turbines
d) That they can also be produced by accelerative / décélérative means
e) That they can also be produced with simple paddle combinations, cylinders, simple paddles, standard poly faced paddles, paddle structures

Dynamic generalizations

In this section, we will shows that if the Translational/rotational kinetic of Turbinary machine is the most central and the most idiomatic one, it is not the only one. We will show that many variant of kinetic, situated between the standard rotary one and the Translation Turbinary one may be realized, in accordance to a certain .number of specific geometric component and determinations. All these variant will content, at different degrees, a quantum or a ratio of Translational value, and it is why, they stat Turbinary of the kind.. We will see, the more the Translational ratio in important, the more the machine is realizing in a power full way, and we will shows who to realize this specific arrangements. These dynamic generalizations are:

a) That Turbinary machines can be realized by degrees, by (clockwise) Translational paddle movement of first degree, of second degree, these degrees being able to be realized either horizontally or vertically
b) That they can possess various differential, retro and post rotary, and contrary mechanical degrees
c) That they can, when realized with a contrary mechanic, realize Material , cylinder figures , Geometric figure, and Sequential figure of realization of the geometric figure , and Figure of displacement points .
d) That they can, as static cylinder machines, be realized in bi functional compressive parts.

Organizational corpus

In this section we will shows that all the variant does not only has the same conceptual origin, but also, that all the variable realization of these Turbinary machine can be organized in relation with rules that are permitting to distinguish the specificity of each of these in relation to the other and to the general comprehension. This corpus will help engineers to recognize easily the better realizations to be commercialized. These additions will allow us to globalize the group of our enterprise and to show:

a) That the group of all the possible machines can be set up in definite scales
b) That the determination characteristics of all machines can be specified by a very large group of generic criteria, including the criteria of the previous art
c) That many semantic difficulties of the previous art can be correctly specified: appropriate mechanics for rotor cylinder dynamics, working in the direction of the machine
d) That the mechanics by polycamation can also be used to contain stand-up forms of retro rotary machines
e) That they can be realized in center-peripheral inversion, by clockwise cylinder/rotary paddles

Mechanical generalizations

Translational movement by central induction

We must now note a very interesting characteristic of Translational / Rotational dynamics. In this case, any paddle point describes the Translational movement exactly, and even the central point of the paddle. This means that if we realize an observation of any of these points, we will see that any point of the paddle, for example, the ends points a, are realizing a circle. It is why, in the different figure, we describe the translational motion by an ensemble of circular arrows. The circle the head point of the paddle are describing are the Figure of displacement of translational /rotational Turbinary machines. Consequentially, the paddle can be supported by its center. In addition, it is important to reiterate the perfectly bi rotary character and nature of this movement. Starting from these

two ideas, we'll state that, to assure the support by the center of the paddle in (Clockwise) Translational movement, we could use all induction issued from the observation by the crankshaft, b*y taking care to realize however original support and induction gear ratios, assuring the bi mechanic, being a ratio of support to induction gears of one to one.* In fact, in the previous art, as we have specified, we always intend on making the paddle turn in such a way so that it has a distinct character, either post or retro rotary. Consequentially, we always realize gear rations either by larger support gears, during retro rotary generalizations, either by smaller support gears, for the post rotary realizations. Translational paddle realizations and the induction ratio of one to one which their support requires are not in the order of thought of the initiators of the previous art. This ratio prescription, original to the realization of movement explains itself by the fact that to realize an non rotation of the paddle, it needs to undergo a perfectly equal retro rotation to the post rotation of the crankshaft. Since the central crankshaft of these machines is equivalent to subsidiary crankshafts of the poly induction concentrated into a single one, and that all the inductions are possible, the same methods all apply here, by respecting the aforementioned ratios. Like we will see lather, in this disclosure, the geometric figure of a turbinative machine is the figure that is realized from the ensemble of top point for on cycle. In perfect translational kinetic, like we will see, the Geometric figure is similar to the one of the paddle. This is a second way to explain the ratio of one to one to give to the gearing arrangement. Each compression is realized after 120 de3gres of displacement of the eccentric, and the paddle hat to realize a retro rotation that is equivalent to 360 divided y its number of side, so 120 degrees to, what is also producing a one to one ratio.. We can consequentially realize the support of the paddle by intermediate gear, by hoop gear, by central active gear, and so forth, by respecting the clockwise ratio of one to one. In addition, the use of simple mono induction is impossible, and this shows well the originality of these machines. To realize the translational movement of a Turbinary translational/rotational one, movement, we must, by this induction, use the semi transmittive method, a method by which the retro rotation of the support gear will accelerate the rotation of the paddle to a speed equal to that of the crankshaft.

We now know that it is possible to realize the translational movement of the paddle by fixed poly induction, the induction gears being lead in the same direction by intermediate of an external gear, internal gear, by chain, or we can even realize the clockwise movement of the paddle by central induction by the same one to one ratio. (Fig.15)

But as in layering machines and poly induction machines, Translational/ rotational movement machines restore the rotational levels necessary to a full and entire motor action. As the poly turbines, by their nature, Translational movement machines are second degree machines since they always need two inductions, this time horizontally set up. We must in fact proceed, in a supplementary manner to the retro, or post, rotary governing, depending if the machine will be post or retro rotary, of the rotary cylinder.

To do this, we must beforehand specify three notions which are that of horizontal induction or semi transmittive, and that of ascending and descending inductions (Fig. 16)

Semi-transmittive inductions or horizontal inductions

We have shown many times the importance of semi transmissions, since they allow us to modify initial machine figures, or even, to make these machines apt to restore their retro and post rotary power of a same paddle.

We can say that there mainly exist two types of semi transmissions, accelerative or décélérative transmissions, and inversed transmissions. We can also say that each of these semi transmissions could be produced with standard gears, internal or external, or pinion gears (Fig 16).

In Turbinary machines, it will often be necessary to realize semi-transmission confoundedly, inversely and accelerative. This will happen mainly when the action of the cylinder will be activated in relation to that of the eccentric. Since the cylinder acts in contrary motion of eccentric of the paddle, or in specific circumstance that we will definite, in contrary motion to not only the eccentric of the paddle, but in contrary motion to the paddle to, the paddle, and at a different speed than it, we'll need a semi transmission realizing both these necessities at once.

The poly inductive semi transmission inductive is very simple to this aspect. It will be the case to set up, in a rotary manner, in the block of the machine, inversion gears. We'll then provide, depending on the necessity, the crankshaft's axe with an external type gear coupled to these gears, and we'll provide the rotary cylinder of the machine with an internal type gear. This gear will itself be coupled to inversion gears. The result of such an arrangement will allow in a condensed manner to realize the anti rotation and the speed reduction of the cylinder in relation to that of the crankshaft. Note that in certain occasions, the speed of the parts could be equal, and in other cases, that of the rotary cylinder will be superior. We could also proceed by pinion gears. We'll couple one of the pinion gears to the crankshaft and the other to the cylinder. We'll couple one of the two gears by the intermediate of a pair of inversion gears, taking care in choosing one of the two gears with a dimension superior to the other. Each of these gears being coupled to the crankshaft or cylinder's gear. We'll obtain both the anti rotation and the necessary speed difference required. (Fig 23)

As we saw, since the beginning of the disclosure of the mechanical support part, it is possible to realize the power axe of rotation by using the axe of the cylinder, like we did in the first mechanical realization. By an other side, when we said that the paddle can by supported, also by a central eccentric, its is also meaning that this eccentric may by, like in standard engine, the motor axe of the machine. Finally, when we say that the support gear of the mechanical induction and the cylinder may be dynamical and activate by a semi transmission, we also suppose that any axe of the semi transmission may be utilized as the motor axe of the engine, what has been definite in our earlier works relative to the semi-transmissions.

Generalization: we enounce that all the inductions can thus be transformed into semi transmission, and for this reason, the semi transmission could for the means of the current be named justly horizontal induction. We'll find, in our previous patent applications as well as in our antecedent patent applications, many examples, which all answer to the current definitions.

Ascending and descending inductions

By ascending inductions we mean all first degree induction of the previous art as well as ours and of superior degrees, in which the support gear is set up centrally, and which the induction gear is set up peripherally. For example, inductions by mono induction, by hoop gear, by poly induction are ascending inductions.

Contrarily, if we set up a support gear, this time peripherally, either set up rigidly on the crankshaft's crankpin, or even, for example on the paddle of a machine, and from this gear, we activate a central gear, we are now speaking of descending induction. The use of these two inductions in combination in a standard machine can allow the creation of a paddle support different from the motor axe which will be activated by the paddle. At the limit, this would be a method said by elided semi transmission (Fig 17).

In the case of Turbinary machines, we could, by a paddle side, activate its translational movement, and by the other paddle side, set up on the paddle a peripheral support gear, and by means of an induction, for example hoop gear, lead the retro rotation of the cylinder.

The three great support methods for first degree Translational movement Turbinary machines (fig. 17)

As we have shown for the induction layering in height, since it exist more than fifteen first degree inductions, and that each of them can be combined to a second first degree mechanical induction, however, this one being peripheral, we have a very impressive number of total mechanical inductions.

In the same way, if we accept the simplification which we have previously produced to the effect that all semi transmission is a horizontal mechanical induction, or in other terms a neither ascending nor descending induction, but rather transferred on the same center, or on itself, *and consequentially all induction can be transformed into semi transmission, and in addition that Turbinary machines always require two confounded and coupled inductions,* we notice that there exists here an impressive number of possible induction combinations which would be very difficult to completely index.

A rational and synthetic regulation of their organization will allow us to not have to expose all of them, and this time to correctly group them. This rule is as follows:

We can realize the combined support of all Turbinary machines by using as combinatory parts, (fig 17)

a) The paddle
b) The crankshaft
c) Or the induction gear of the cylinder, each of these ascending, descending, or semi transmittive inductions being combined to this same element which we will have determined

To better understand this last statement, we simply need to grasp the idea that the movement of the cylinder and that of the paddle must be perfectly coordinated and synchronized. Consequentially, their inductions must also be coordinated and synchronized, which signifies that they must have a dependence characteristic of one to the other. In other terms, there will need to be minimally one of the parts of their respective action, which must be shared, must be the same for the two inductions. These parts will either be the paddle, the crankshaft, or the induction gear.

Combinatory paddle interdependence

General rule, we'll realize the interdependence of the system by means of the paddle by activating, as we have previously demonstrated, the translational movement of the paddle by one of the inductions, with a ratio of one to one of the support and induction gears, and we activate the cylinder inversely, once again from the paddle, by a descending induction, by setting up on the paddle a peripheral support gear, and on the rotary cylinder an induction gear.

In this manner, when the paddle will be activated by the crankshaft, by means of its ascending induction, it will activate the cylinder, and inversely when it will be activated by the cylinder, by means of its descending induction, it will activate the crankshaft. All induction could thus serve as ascending or descending induction.

Combinatory interdependence by the crankshaft

In the induction combination methods by the crankshaft, we'll realize from the crankshaft an ascending induction of one to one which will assure the correct Clockwise paddle movement. In addition, we'll connect, as we have previously shown, the cylinder and the crankshaft by means of an contrary and accelerative semi transmission. Consequentially, the paddle and cylinder movement will be totally coordinated. To realize this type of induction, we could use, for the paddle, of any induction, and for the cylinder, any semi transmission. Many combinations are therefore possible. We'll consult with our works, in antecedence, and our previous works to take knowledge of many examples to this effect

Combinatory interdependence by paddle support gear

As we have previously shown, we must realize the support gear and paddle ratio, in the order of one to one to assure its translational movement. In addition, we know that we can, in the measure where we modify adequately the induction and support gear size ratio, we can instigate the support gear by any induction, thus making it semi transmittive, without modifying the rotation ratio of the paddle in relation to its initial dynamic. It is thus possible, from the crankshaft to realize a retro rotary and semi transmittive management of the support gear of an ascending paddle induction, which we have realized many times in our works.

In the case of rotativo circular machines, we'll need to motivate the dynamic support gear in such a way so that all while allowing the respect of the one to one characteristics of clockwise movement, it activates, being fixed solidly, the retro rotation of the cylinder, consequentially we can say that the same semi transmission will activate the dynamic paddle support gear, and that this dynamic paddle support gear will be, confounded with the cylinder's induction gear. The two systems will thus be, in a large sense, connected by the same semi transmission, and in a way restrained by the gear, serving as support gear on one level and as an induction gear on the other.

As previously, many configurations are possible, since there exists many semi transmissions, but the logic will remain the same.

Figurative generalization

Translational movement machines with post and retro rotary paddles (Fig. 18)

Although of original dynamic, reminding, as we have said, the qualities of piston engines and turbines, Turbinary machines use paddle and cylinder geometric figures from the previous art in a new way. (Clockwise) Translational paddle movement of Turbinative of first degree of liberty machines are consequentially realizable just as much in a post rotary figuration as a retro rotary figuration. This means that we can realize Turbinary translational kinetic of the first degree of liberty with all the geometric static figure of the art. We will call the material figures be witch we realize a Turbinary machine the Material figures of the machine We must however note that their dynamics are different; a post rotary translational movement machine realizes a contrary movement of the compressive parts whereas retro rotary type machines realize a cylinder and paddle movement in the same direction.

Clockwise paddle movement rotativo circular machines and number of sides (fig 18)

As we have already observed, the figurations of the compressive parts of Turbinary machines are similar to that of standard rotary machines, when they are realized in the first degree. We thus must specify that all the figures of retro or post rotary machines can therefore be realized in Turbinary mechanics, with translational paddle movement, and

that , also in first degree of liberty. In fact, for example, in a triangular cylinder, four-sided paddle post rotary machine, the paddles will always possess (clockwise) translational movement and the cylinder will always be anti-rotational. In the same manner, in retro rotary figurations, the three sided paddle will have a (clockwise) translational movement in the same direction of it's strictly rotation cylinder (Fig 25).

Translational paddle movement Turbinary machines and bi rotary machines Material Figures (fig 18)

The poly turbine type of machine, in which the cylinder and the compression paddle structure have been invented by Wilson (1975) and which we have furnished the adequate mechanics when the cylinder was fixed, can also be realized rotativo-circularly. In these cases, the subsidiary crankshafts, added with geometric rods will realize a strictly circular action, which will realize the elliptical control of the paddle structure. Their induction gear will be coupled to the cylinder gear which will complete the system rotationally. We'll note here that even if the induction crankshafts and the cylinder have no acceleration/deceleration, the paddle structure, more complex, realizes its oscillatory aspect, an aspect on which we'll return further, for all machines. (Fig 26) We must also note, as we'll see further that many rotativo circular dynamic degrees will be possible for all machines, including poly turbines.

Rotativo circular accelerative /décélérative paddle or cylinder movement machines

We can, as for all machine, use in the set up of Turbinary machines polycammed or polycammed derived gears, which will produce modifications in their cylinder forms resulting from the *accelerative /décélérative* movements of the parts. (PCT CA 2004 00713, and American application number 10/514,403) We'll use mechanics similar to those we have already described in our differential turbines, in which the cylinder will be supported by polycammed gears, realizing a strictly circular, but *accelerative /décélérative* , support action. (fig 20)

We could for example decide to conserve the rotary movement of the cylinder's irregularity, but grant the clockwise movement a certain *accelerative /décélérative* irregularity. We'll thus modify the cylinder and we'll then realize a superior thermodynamics, as when it is applied in standard machines. In rotativo circular machines, we could inversely realize the movement of the rotary cylinder in a succession of accelerations and decelerations .(Fig 27)

Translational movement Turbinary machines: paddle types

We could realize *Turbinary* machines with three types of paddles which could also be used in standard machines. (fig 21)

Firstly, we'll use a combination of unitary paddles in the cylinder and produce explosions between each of them and the cylinder, or between all of them and the cylinder. In these two manners, the combustion chambers could be common, which would have for effect

to multiply the reach of the crankshaft by two. We could thus considerably increase the compression ratio and realize these machines with a diesel gas system.

Of course, we could realize these machines with multi-faced paddles, in other words standard paddles, or as we have previously determined with paddle structures (Fig 21, 22).

Translational paddle movement Turbinary machines and number of degrees

Since the beginning of the present disclosure, we have realized Turbinary machine first, by dividing the standard movement of a planetary paddle in sub movement, attributable to the master and subsidiary crankshafts of the poly induction engine, and second, by attributing theses movement to the paddle and the cylinder. This is meaning that we always realized what can be called translational Turbinary machine of first degree of liberty. The translational movement in its most natural state is realized by the positional movement of the circular paddle. But it stay important to say, after that we have, in the present invention, correctly establish the first level of liberty of the Turbinary, that the degrees of liberty can, on this basic realization, be augmented. In these two last cases, it is necessary to increase one of these inductions of degrees to realize the machine (Fig 29 c and d). This means that the planetary movement requires an induction degree superior to the simply rotary movement.

Clockwise paddle movement Turbinary machines, and symmetrical oscillatory movement (Fig 22)

We can also realize the paddle movement in an oscillatory translational manner with support from polycammed inductions. In fact, the ratios of one to one will remain for a rotation, but with the means of polycammed gears, the orientationnel fixed movement will be alternatively variable

This will allow the realization of figures of odd cylinder machines with opposite unitary paddle movements, and to realize the oscillatory character of poly turbines.

Standard rotary machine are realized with fixed cylinder and planetary paddle. We have, beforehand, shown that we can inverse that kind of kinetic realize and realize machines with fixed paddles and planetary cylinders. In this case, the planetary movement of the cylinder will turn around a fixed paddle. For example, in a triangular retro rotary type figuration, a triangular cylinder will describe a planetary movement around a fixed to sides paddle. It is interesting to see that in that case, the planetary cylinder will require a post rotary machine mechanic of a three sided paddle and two sided cylinder figure.

In is interesting to consider, for the present purpose, that a similar inversion can be realized, this time, in Turbinary machines. In the same way, the Translational basic figures can also be inversed from the center to the periphery. To realize these inversions perfectly, we must, as it is the case with standard figures, set up the figurations in their complementary direction, and use the support mechanic of the inversed Material figure

(Fig23). Thus, we can realize machines possessing a Translational cylinder dynamic and a perfectly rotational paddle dynamic. Of course, as before, the cylinder can be a group of unitary cylinders, in standard poly faced cylinder structure, or paddle-cylinder structure.

In the same way, Translational cylinder movement machines can be realized bi functionally, the cylinder of one is being simultaneously used as paddle of the other. (Fig 24). These procedures allow powerful turbines or two time or anti repression management.

Dynamic Generalizations

Rotativo circular machines and dynamic degrees

Since the beginning of the present disclosure, we have work with the temporal division of the time of a standard paddle that we realized in poly induction mechanical mean, and we separated these movements, and distributed them in the paddle and the cylinder, to produce Turbinary machine of the first degree of liberty movement. As we have shown previously, Turbinary translational machines can be increased in degrees by modifying the course of the center of the paddle, all while keeping intact the fixedness of the orientation aspect of the paddle. The degree of machines, so to say, has been increased figuratively, and not dynamically. The following matters will have for objective to show that Turbinary machines can be increased in degrees dynamically, by an augmentation of the degree of liberty of the paddle, without modifying the central movement of the paddle.. We'll thus enlarge the notion of translational Turbinary movement machine by that of general Turbinary machines.

We'll show in the following matters that the Translational dynamics are not only important from the practical point of view, and this in regards to qualities which we have already enounced, but also, from the theoretical point of view. *We'll show in fact since they constitute a major segmentation or cutting axe allowing realize the delimitations of dynamic's areas of machines and to realize the comprehension of motor machines on a totally different level, being the angle of dynamic's degrees.* These comprehensions will allow to create on a level the complete scale of rotary machines, and to correct many semantic errors of machines of thinkers of the previous art, all while including them in a much more general theory, possessing characterizations of much more powerful and effective machines.

First example

We can for example suppose a machine in which the paddle movement, a two sided paddle will displace itself in a one sided cylinder, this cylinder however being not fixed, but rotational (Fig 25). In this case, the Material figure of the machine is a post rotary one, of to side paddle on one side cylinder.

In the mean time, it is interesting to see that we can also realize the machine in giving to the paddle supplementary et precise determinations. In fact, we know, that in standard machine, this type of paddle will be at its top position when the surface of it will be perpendicular to the eccentric. By an other side, we know that, this is happening three times, with this kind of paddle, when the cylinder is fixed, and when the cylinder has three sides, what is realizing a triangular retro rotary machine. We'll consider in this first case that the paddle has a retro rotation allowing it to realize three faces. The retro action of the cylinder will compensate the figures. We'll thus state that we can realize the machine in such a manner so that the paddle and the cylinder act in the same direction. The push between the parts would then be only differential. For the present purpose , we see that it clearly possible to construct a Turbinary machine of a post rotary paddle and cylinder figure, but in the mean time, in witch the paddle will realize a kinetic that is exactly the same than if it would be articulate in a fixed triangular cylinder, comprising three top positions, and not one of one, like in the post rotary figure. It is why we will give to the material figure of real compressive parts of the machine the name of Material figure of the machine. We will give to the figure of the ensemble of top positions the name of Geometrical figure. Finally, if we follow the figure of each head point of the paddle, the Figure of displacement point, explained earlier, we will see that it is the same , in that exempla , to the geometrical figure. We got also to observe that, in that example, the sequence of realization of compression is successive, witch will be realizing an successive figure, called Figure of Sequence realization of the geometric figure.

Conversely, we can suppose, for a same type of figure, a slower paddle retro rotational movement, and a post rotational cylinder movement allowing the fulfillment of this alteration (Fig 34). Even here, but this time post actively, the paddle and cylinder will act in the same direction, but differentially one in relation to the other.

Finally, we suppose the fixed cylinder mechanic (34), where the realized force is neutral, and the movement dynamic is clockwise (Fig 34), in which the movement of the paddle and cylinder are contrary motion, thus developing a lot of energy. Very finally, we could, as Wankel has done himself, realize the paddle and cylinder strictly rotationally (Fig 34). We thus see that for a same figure, five very different dynamics are possible.

Comprehension (fig 26, 27)

To better understand the rational character of the last examples, we'll state a formula which could then be applied to all machines. We'll say that this formula is the dynamical and mechanical regularization formula, or cylindrical counter part formula. This formula, thus, is stated in the following way.

In standard engine, the position of next compression occurs when the paddle surface is perpendicular to the eccentric, and this arrangement is made to occur in a relation with a fixed cylinder. In Turbinary machine, we can for a same paddle cylinder figure, displace the next compression area by advancing or backing it up in relation to the standard area of the next compression, this area being realized when the machine's cylinder is fixed. In

counter part, we'll effect a mechanical regularization and the cylinder will have to dynamically be displaced for as much.

Let us give an example. We know that during a standard dynamic, for example of triangular paddle and two sided cylinder, we can measure the difference of angulations between the various culminating paddle points, corresponding to the emplacements of successive explosions, and that in this case, we realize an angle of eighty degrees. In the triangular engine, one hundred and twenty degrees separate each explosion location.

We can determine for a figure, freely all new perpendicularity location to the eccentric on the successive paddle surfaces of each paddle. Consequentially, this foreseen point of new expansion will not be realized by standard angle for the new paddle rectification. For example, if we want to realize the new compression point not at one hundred and twenty degrees, but rather at sixty degrees, we'll realize that there is missing a displacement of one hundred and twenty degrees to be realized in standard way. We'll thus need to compensate this difference by a mechanical regularization by applying the angle difference of this new maximal expansion point and that of standard expansion to the cylinder. Consequentially, we'll make the cylinder realize a retro rotation of one hundred and twenty degrees.

As we can see, if this point is anterior to the standard point of explosion, it must be compensated by a cylinder retro rotation, equivalent to the same angle separating these two points. In addition, if it surpasses the standard explosion point, we'll need to give the cylinder a post rotary action in which the angle will be equivalent to this difference to be maintained.

For example here, if we intend to produce the following explosion at two hundred and forty degrees, we'll calculate sixty supplementary degrees to the standard position. The cylinder will therefore have to be activated post actively of sixty degrees. However, this only rule doesn't manage to effectuate a correct and complete report of all the mechanical possibilities in the matter. To well understand the types of Turbinary machines thus created, we must call on the notion of paddle retro rotation.

As we have already mentioned, in all rotary machine, the paddle has a retro rotary action in relation to its eccentric, and that this can be observed by observation by the eccentric. We have already determined that the retro rotary action more or less pronounced would allow us to determine if the machine was of post or retro mechanic nature. In the two previous examples, it is to be noted that we have, by advancing or backing up the moment of explosion, increased or diminished the de-rotation speed of the machine's paddle. By analyzing in more detail the examples of these examples, we notice that when the machine paddle attains its next compression after only sixty degrees, it thus realizes six explosions per rotation. The retro rotation will thus accelerate to such a point that we'll need to use a retro rotary type of induction, for example a mono induction with internal support gear and external induction gear. In the second figure case, the paddle retro rotation speed will remain weak and the machine will remain of post rotary type.

We thus see that, for a same figuration, the dynamical and mechanical machine alterations make the machine pass from post to retro rotary.

Once again, translational paddle movement proves to be important, since its perfectly bi rotary dynamic nature allows to consider it here as a segmentation limit of the most important. We can once again give the image of this bi rotary sense of Translational machines by saying that the paddle realizes explosions at the same places as its inversed figure, being here for example triangular. We can say that the triangle obtained by the succession of new top positions of palled is forming what we are calling the Geometric figure The translational dynamic is thus an important mechanical hinge. In fact, we can accelerate the de rotation of all post rotary paddle, without changing its nature, up to the clockwise limit point. If we accelerate the paddle retro rotation any more, the machine becomes retro rotary.

Figurative and mechanical evidence

The mechanic is admittedly the best proof of belonging of a machine to one class or another.

Here, in the Translational mechanic, the mechanical realizations, in a one to one ratio, are perfect proof of the perfect bi mechanical aspect of the machine. It sways neither to the side of post, or retro inductive machines. During the use of this sort of mechanics, particularly in mono induction, we must correct them by semi transmission to realize them bi mechanically. In the same way, if we consider the definitions of the paddle movement in relation to that of the crankshaft, observed from the exterior to define the post or retro rotary character of the machines, we notice that here again, the paddle turns neither in the same direction of its crankshaft, nor in opposite direction, since it rotates position.

As for the capacity of dynamic retro rotary realization, we can understand that, as we have already said, in retro rotary machines, the paddle de-rotation in relation to its crankshaft is more accentuated than in post rotary figures. By understanding that this is the consequence for a same paddle of a larger number of cylinder sides and consequentially of a bringing closer together of them, if we understand that this bringing together, even if artificially produced, needs itself an accelerated paddle rotation and a retro rotary mechanic.

If we observe strictly the unfolding of the movement of the paddle of a Turbinary machine in which the paddle has been accelerated beyond that of the translational bi rotary dynamic, we'll state that it twill describe , in relation to the bloc , a geometrical figure different than that of the material figure, this time retro rotary. This figure is the Displacement figure. The machine has to be have an other component, witch is the Geometrical figure. This figure is formed by the ensemble of top position if the paddle for one turn. Without the component of the geometrical figure, the cooperation of paddle and cylinder can be respected , ansd the machine will be realiser without pertinent cycle.

Le relationship of paddle/cylinder has to create simultaneously in a pertinent way in relation to the bloc of the machine.

We must therefore be clear that the mechanical realizations of Turbinary machines must take these points in account and *that we must take in account the Geometric figure to determine the adequate paddle mechanic, and the nature of this machine.*

We saw that for all the cases in which the next top position of the paddle is different from its position when the cylinder is fixed, the cylinder has to be organized dynamically to exactly that of the value of the difference of the top position to continue to stay in relation with the paddle. But , it still remains possible that the angle of the difference of the next top position be at an angle of an infinite number , and for this reason, the inner movement of cooperation between the paddle and the cylinder would never cooperate with bloc of the machine, and for this reason, the machine would not be realized as a cyclic machine, so as an engine, a compressor, or a pump. The relationship of the paddle and cylinder thus, consequently, must always be definite in either way, firstly between themselves, and simultaneously in their kinetic relation with the bloc, in such a way as to be able to define the cycle of the machine. Moreover, it will be important to know the exact determination parameter of different possible cycles to realize a good choice of eventual production. The geometric sequence, an Observation figure, will allow the realization of the complete relationship and determination of the machine as a cyclic machine.

We'll come back later on these notions of material and Geometrical figure and will show that we also needed to add that of the Sequence of realization of the geometric figure. But before that, it is necessary to treat of another important subject, being that of differential and contrary direction movements.

Differential and Contrary movements as compressive or motor movements (Fig,25, 26 , 29, 30, 40, 41 and others)

All the Turbinative engines are realizing contrary motions between the cylinder and the eccentric of the paddle . The reason of that is really simple. This contrary movement occurs because, like explained before, the ratio of tuning of the eccentric found in the standard motion, is modified in Turbinary engine, but is re equilibrate with the motion of the cylinder. But like we will see her, when we speak of differential and contrary movement, we speak of differential and contrary movement of the compressive part, in addition to the contrary movement of the cylinder and the eccentric. We will see that is completely changing the type and ratios of gearing of the mechanical induction. In fact, we can determine the important differences between the various machines with Turbinary movement, which this time are not in relation with the post or retro rotary, but rather in relation with the realization of these machines as their compressive forms, or as their motor form.

Even here Translational movement machines will be of a notable use and relevance to define the current matter. In fact, in the current section it is necessary to conclude by clearly enouncing that if Turbinary movement machines can be subdivided in machine classes, they can also realize another sub division, of the most relative, being that of compressive or motor machines.

We can state that which follows. All machine in which the location of the next compression is located between the standard compression area and the translational compression area, will have a contrary action of the compressive parts, which will assure it a motor power. (Fig. 45, 47, 4.2)

We can also state that which follows; all machines in which the location of the next expansion is posterior to the location of the next standard expansion will see its compressive action completed by an action of the cylinder in the same direction. The machine will thus remain post rotary, in its material components or Material Figure, but will become, in its nature, a retro rotary one, a Compressive one , since the resulting force will be but differential.

We can finally analyze the following statement; all machine in which the retro rotary movement will be accelerated further than the translational movement, and which will consequentially realize its next expansion location before the area of the next expansion in this machine will not only become retro rotary, but will also loose its ,be, to, a differential Turbinary machine.

In fact, as in rotor cylinder piston machines which we have previous presented as an example, Turbinary machines can be subdivided in motor classes, being the (contrary , and the anterior or posterior differential classes.

If we intend to then realize a visual image of the group of these possibilities, we'll determine the following hinge points (Fig.50)

a) The fixed position: a strictly figurative representation of machines of various degrees, when not in motion , of witch we observe Material Figures
b) The standard position: a position of first compression when the machine is realized by fixed cylinder, with planetary paddle

c) The posterior position: a position of the parts when all the movement has been completed, when the next compression position is at the same point of that of the fixed position unison

We could then create Turbinary machine zones.

We'll thus find:

a) Between the fixed and standard position, *anterior* differential types of machines
b) Between the Clockwise and standard positions, standard, rotativo circular machines
c) And between the posterior and counter form cylinder positions, the posterior differential rotativo circular dynamics

It is to be noted that we make distinction here for post rotary machines. We'll show that these distinctions apply, by regularizing them, as evidently to retro rotary machines, as to planetary cylinder/fixed paddle, or bi rotary machines

These distinctions are still insufficient to fully describe all machines. In the next section, we'll show how, with the help of the notions of Material , Geometrical , Displacement and Sequential figures, we can complete this final table and realize a correct report of more complex machines.

Material and Displacement figures of Turbinary machines, Geometric figures and Sequential realization of geometric figures

In the first part of disclosure, we said that Turbinary machine were made with the same Material figure of paddle and cylinder than standard machine. This here called material figure. We also saw that it was possible to determinate figures by observation certain figures of a displacing point of the paddle. These figures has been called Figure of Displacement point. The can be apply to Turbinatiry machine

In our last examples, we have applied a general displacement regularization rule of the displacement of the next explosion, allowing counterbalancing of this positional material change by correct rotary cylinder activation. We'll note that if we have chosen alternatively the new compression position, and in addition that we have effected the corrections statically and that for this new compression. When the geometric figure is not realized by successive sides of the figure, but by alternative sides, we will say that this constitutes the Sequence of realization of the Geometric figure.

It is important to specify that, when we said that at each time that wee modify the ratio of turning of the paddle in relation to its eccentric, it is possible to compensate this modification by the rotation of the cylinder of the same number of degres , or in an other way, when we modify the angle of new top compression, it is always possible to keep paddle cylinder relation by modify position of cylinder in the same manner. But it is important to , to specify that these arrangement are not guarantying the new kinetic cooperation between the compressive element will be pertinent in relation with the bloc of the machine , like it was in, our firs example, in witch the to sides paddle was traveling simultaneously in a one side material figure, an a thee sides Geometrical figure.

In fact, it is of a great importance to note that even if the rule that we have given is applicable to all new position, the realization of the obtained machine will pose problems when these new positions will realize more complex angles. For example, in a standard machine, if the new compression is found at seven degrees, this will take many rotations of the machine before finding its initial position. It has to be noted that many and various angle modifications of ratios of eccentric turning, correctly compensate by the cylinder rotation will never realize a cycle of the machine in relation to the bloc, because these compression will never occur at the same place. In many cases, determination of the holes of exhaust and intake , and position of firing and other element will not be possible, because paddle and cylinder are cooperating together, but not with the exterior of the engine. It is why, it is absolutely fundamental to archive complementary rules that will permit to establish precisely the determination and geometrical components that will guarantee the cooperation of dynamic compressive element to the bloc of the engine.

The first example given at the beginning of this part was eloquent. In organizing the relation to the bloc of the paddle in such a way it realize also a specific cycle, we were realizing, simultaneously to cycles for the same paddle. The first, a post rotary motion , in relation to a rotational cylinder, and the second, a retro rotary motion , in relation to a virtual retro rotary cylinder , that will make that the three tops compression will realize a triangular figure. This figure is called the Geometrical figure of the machine. In addition we'll also notice that we can determine certain new positions which have a mechanical semantic value. So we clearly see that the most obvious, for example, for a machine of a given rotary type, for example, post rotary, consists in giving to a given paddle, the new compression position of it's counter part, here, for example is retro rotary.

We also clearly see that the most pertinent way to insure an exterior cycle of the paddle , in addition to insure its cooperation to a dynamic cylinder, is to insure it cyclic displacement in relation to the bloc, what is done bay is realization of a geometrical figure, witch the most evident is the counter part figure.

For example, since we know that a two sided paddle can feed a one sided post rotary cylinder, or three sided retro rotary cylinder, we could take a paddle of two sides and a one sided post rotary cylinder, and determine the point of the next explosion at the same points as in retro rotary triangular engines. We'll compensate this change by a cylinder rationalization, mechanically organized in the same way as for all clockwise movement machines (Fig 28)

We'll thus realize that the establishment of the Geometrical figure is not only important to secure the cycle of the paddle , and the tops positions of compressions to the bloc of the machine, but also to determinate exactly the type and the ratio by witch we will realize the mechanical support of the paddle. For example, the mechanic supporting the paddle is exactly the same mechanic as a triangular retro rotary machine, and that for this reason, if we follow the paddle displacement, we'll note that it describes exactly this form. In addition, since the cylinder is rotary and this arrangement has been obtained by

the change in position of the new compression of a post rotary machine, the material figure of the paddle and cylinder will remain post rotary.

Let us give a second example, this time starting from a retro rotary form, more precisely with triangular paddle and (squaroid) a cylinder of a square form. Normally, each new compression of this machine occurs at each ninety degrees . We can however intend to determine this new explosion at one hundred and eighty degrees. According to the previously given rule, we'll proceed to a regularization by a post activation of the cylinder of ninety degrees, being the difference between the degrees of these two standard and projected positions.

Doing this, we'll state that the paddle control will have to be assured by the same mechanic of that of a post rotary paddle of a triangular paddled and double arc cylinder machine, by however conserving the length of the reach of the crankpin of the material form. This will be confirmed by an isolated observation, of the action of the paddle. In addition, the rotation of the cylinder allows the conservation of the material cylinder of the first machine.

We thus see that it is absolutely necessary and pertinent to determine some notions, apt to allow us to take in account these situations. Consequentially, we'll call the form of the paddle and cylinder before alteration, material forms, or material figures. In addition, as the form described by the paddle only allows not only to prescribe the mechanic, but also to determine the location of accessories such as, the spark plugs, the fueling and exit areas, we'll say that the form of the paddle and of the cylinder visually realized will be called virtual forms or figures.

We could then give other examples which aren't simple counter parts. We could, for example, realize a two sided paddle figure, one sided cylinder, post rotary in a retro rotary machine of four sided Geometrical Figure, with explosions at ever ninety degrees. We could realize a post rotary machine of triangular paddle, in which the explosions will be at ever sixty degrees, thus realizing a six sided virtual cylinder retro rotary machine. Take note to consult our antecedent patent application to take knowledge of many other examples. (Fig. 29)

It is important to note that for the moment, when the paddle is realizing the Geometrical figure of the counter part cylinder, the Geometrical Figure, the Displacement figure of the ends of the paddle and the Figure of sequence of realization of the are the same, and simply different from the Material figure. We will see, that in more complex arrangements, this will not be the same.

Let us simply note in addition, the originality of the translational movement machine from this point of view. The paddle movement is realized in fact as if we wanted to realize the explosion exactly in the same locations as its counterpart and not by mechanic, but rather in reverse way, mirrored, being that of the triangular engine, being at ever one hundred and twenty degrees. The paddle retro rotation is thus accelerated, and the cylinder retro rotation is consequentially produced. So in Translational Turbinary engine,

we have the first example in witch the Material figure is for example a trochaic piston and a double arc cylinder. We see that the figure formed by the successive top positions is neither a square figure, or a double arc figure, what would be post rotary or retro rotary figures of the trochaic paddle. The Geometrical figure is a triangular figure. And, like we saw earlie5r, the figure of displacement is circular, and has a position different for each end of the paddle. But her the figure of sequence of compression is successive, and similar to the Geometric figure. We clearly see that we are long away from the standard kinetic, in witch all these figures are the same.

In summary, we could thus enact that which follows, that all Turbinary machine is composed of a material figuration of the paddle and cylinder, and a Geometric figure of the displacement of the paddle in relation to the bloc, that we will generally call the Geometric figure, and the paddle mechanic and the positioning of the accessories and elements could be realized according to this Geometric form.

Independent and connected Geometrical figures

As we have stated, in standard fixed cylinder figures, a same paddle can be activated in a cylinder with one additional side, in the case of retro rotary machines, and one side less, in the case of post rotary machines. In Turbinary engine, we saw that realizing a double motion paddle, realizing a material figure of one type, and its Geometrical figure of the counter type was the simplest way to realize simultaneously cylinder and bloc coordination, and establish the real nature of the machine, and its cycles ant mechanical means. It is what we call the realization of the Counter Figure The machine realization having a Material and Geometric form which is evident thus consists in realizing a machine with a given material cylinder and paddle form, and a Geometric figure identical to the cylinder form of the opposite rotary part.

In these kinds of realization, the Geometric figure will be the same as the Figure of displacement points of each end of the paddle. For example, if we intend to realize the Opposite figure of a two sided paddle machine, turning in a material cylinder of one side, which is consequentially post rotary, we will determine the Geometrical Figure to be similar to the one of a three sided cylinder, giving it its retro rotary substance.

But it is absolutely interesting to observe that we could even, realize a three sided paddle, turning in a two sided cylinder, this machine being consequentially of post rotary material figuration, and simultaneously a three sided paddle machine turning in a Geometric four sided universe, similar to retro rotary machines (Fig. 32,33,34)

Breaking the rules of sides numbers of Geometrical figure

It is important to note here that one of the originalities of Geometric and Material figuration machines consist of that in their Geometric aspects, and these machines are not subject to the side rule. In fact, we can realize the machine in such a way so that a paddle, for example, of three sides, realizes a Geometric figure of a virtual cylinder of four, five, six sides and so forth (Fig 35,36,39.1,39.2)

These possibilities will give an increased liberty for the realization of various rotary machines, since they will no longer be subject of the rigid side rule. These will permit , with a single paddle and cylinder, to realize more explosion by cycle.

*In summary, the standard even paddle figures lead odd cylinder figures, and inversely. the **Geometric** figures introduce a liberty since the numbers and their odd or even characters can all be useful.*

Material and geometric figures, versus Sequence of realization of the Geometric figure

Steps movements and Sequence and realization of the Geometric figure (40. 1,40.2, 40.3)

One can observe that when the number of sides of the geometric figure is augmented, the retro rotation of the paddle on its crank pin is, if the geometrical figure is successively realizing it's sides, augmented as well. This means that, for example, a post rotary machine is not only transformed into an opposite retro rotary geometric form, but to a retro rotary geometric forms possessing a higher number sides sand so a higher number of compression and explosions. We can also observe that the Figure of Observation of one point of the paddle , for example , the end of it, is in no way similar to the Geometric figure , and also that each end of the paddle, like for the translational motion, is describing its one figure. We will also observe that, in certain cases, the Figure of observation is in some cases, for example for a trochaic paddle in a six sided geometrical figure, simpler, for example, is realizing an elliptical figure, and in some other variations, for example for a trochaic piston realizing a pentagonal geometric figure , will be really more complex and will take more that one rotation to realize. In both cases, the fact that each end of the paddle is not realizing the same orientation figure, and at different times will unbalance the paddle. It must be said that because the Geometrical figure will be of a retro rotary nature, the mechanical induction will also be of this type, and the machine will work on the back of the paddle , which is contrary to the thermo dynamic development of the explosion. Finally, paddle and cylinder will work in the same sense, and the power between the parts will be only differential. For all these reasons, it is necessary to see if there does not exist other kinds of dynamism that would increase the number of sides of the geometric figure and, as well, that of explosions, but, all without having the precedent gaps. (Fig.41)

The last notions which we have just described must now be put correspondingly with the notions of motor and compressive type machines, these last ones being expressed, in Turbinary machines as the idea which we have also commented, of differential (fig 42.1) and contrary movement machines.

In all the previously given examples, we have spoken but of machines in which the next compression will occur, for standard machines on the next face of the cylinder, and for Turbinary machines, on the next face of the Geometric Figure. Its has to be noted that , when the number of sides of the Geometrical figure is superior to the one of the counter

type figure, the figure of displacement of the ends of the paddle , when the Geometric figure is realized by successive sides is not the same for each end point , and is not the same , like in translational kinetic, of the Geometrical figure. The reason of this is that the machines begin to inter in the differential machine explained earlier. So we realize that when the number of sides is augmented, we have to add, to the undesirable power full action on the back of the paddle, occasioned by the retro rotary mechanical induction, the multi shaking of the paddle. We also repeat that, in these machine cylinder and piston will work in the same direction,. That will produce a simply differential effect. All these reason explain why it is necessary to explain who to construct Turbinative engine, with a higher number of explosion, but without these bad effects.

Thus this only dynamic set up deprives us of interesting developments. In fact, we have understood that the contributions of machines is to, with a cylinder with a number of sides low enough, for example two sided cylinder with triangular paddle, produce a machine with a high compression degree, and also realize this machine with an increased number of explosions, as it is the case with multi faced paddle and cylinder machines. For example, by realizing the machine with a two sided material cylinder and a six sided virtual cylinder, we'll obtain six compressions per rotation, whereas we would normally obtain but two.

In addition, as we have shown, we'll need to over retro activate the paddle of this machine beyond the point of (Clockwise) bi rotivity, and consequentially, the machine will not only pass from post rotary to retro rotary, but also from standard push machine to simply differential push, which would reduce even more the motor power, and will only be realized dynamic compressively.

It is thus important to realize the dynamic of the machine in such a way so that it profits from its material figuration, as well as its Geometric figuration, but also in such a way so that the machine can not only conserve, *but also increase its motor capacities. The machine must thus be able to realize simultaneously contrary movements.*

Alternative Sequence of realization of the Geometrical figure (40.1 42.2 42.3)

(It is here where the Alternative Realization of Sequence of realization of the Geometrical figure dynamic comes to the rescue, which we have previously, exposed for piston engines, as well as for standard cylinder piston, moving in a rotational cylinder. We will once again serve ourselves of realizations from our previous corpus, however with pistons, to give an example of the following matter.

As we have already shown, we can realize a piston machine in a rotary manner, as the idea of rotor cylinder machines. In the Alternative compression dynamic, we are looking to make a same piston work from one side of the cylinder to the other This type of realization is impossible in the works of the previous art, since the mechanic allowing the realization of this machine requires either a semi transmission combined to a rectilinear action obtained by poly induction, being the means of polycammed gears, which would

allow to modify the first degree induction form, or even the rotor speed, in such a way so that the induction and rotor can be combined. We won't venture further on these statements, for the matter of the current exposition, and we will content ourselves to mention that this procedure allows, in relation to standard rotor cylinder machines, firstly to realize alternative compressions on each face of a same piston, and secondly to realize compression by "jumps", the sum of all the compressions taking place in two rotations or more. (Fig 41.1 and the following) We see well in the unfolding of the figures that the piston acts in the way of a Slinky, which is where the name has been taken from.

We can understand this solution otherwise, by saying that comparatively to standard machines, we can produce successive explosions which correspond not to material successions nor virtual successions. This type of realization seems perfect in rotary machines. From this fact, this type of realization is not only possible, but also desirable.

We can in fact determine the placement of the new expansion *at a location which is not determined by either its successive material position when it is realized standard, neither in its successive virtual position when we consider the next expansion.* We can in fact, as it is the case in Slinky piston engines, produce this new compression *by jumps and realize subsequent continuations of these jumps which will gradually pass through all the faces of this new figure, in two, three, or even more rotations.(* Fig 45, 46, 47) This means that the Geometrical figure will be realized by alternative sides, and after more that one turn of the eccentric It's in this new way of realizing continuations in compressions that we'll need to establish new spark plug, fueling and exhaust system locations, and this is why we'll say that the figure traversed by these jumps comprise *the real machine figure.* We'll name this figure, real figure, since it is on this one which we must rely on to realize the machine, knowing that, to correctly determine the spark plug, and combustible fueling and exhaust locations. (Fig 56)

Consequentially, we'll thus have for these machines a Material figure, constituted by the figure of the relation of paddle and cylinder sides at rest, a Geometric figure, which corresponds to the realization figure of the number of faces of top compression position and consequentially the machine total, and the Figure of Sequential realization of the Geometric figure, corresponding to the trajectory traversed by the paddle to realize the number of faces in totality, and when, evidently, the geometric figure is not realized by successive sides. Finally , it is extremely interesting to see that , if, in successive realization of the Sequential figure , the figure of Displacement points is alternative , when the figure sequential figure of realization of the geometric figure is alternative, the figure of displacement point is successive, ans is similar to the Geometrical figure. It is important to explain that, with this process, it will be possible to produce a machine in which we obtain a higher number of compression positions , or of sides of the geometric figure , but in which the angle difference of each position of the eccentric for each successive compression stays lower than that of the standard one. The direct mechanical effect of that will be that it will be to conserve mechanical support , with new ratios, but of the same type as the material type of the machine.

An other observation will be interesting. When the Geometric figure will be realized by steps, in accordance with the Sequential figure, the Observation Figure of each end point of the paddle will not only be the same for each one, but also similar to the geometric figure. The vibration will be lesser in the machine.

We'll thus state that for a Material Figure and a same Geometric figure, many Sequences of realization of the geometric figures are possible. If the number of Geometrical figure faces is elevated, some of these Sequences of realization will realize their first compression, even non-successively, anterior to the Clockwise point. The machines will consequentially remain anterior differential, in lack of these contributions. Some of the real figures will also have their first compression beyond the standard first compression location. They will also remain differential, however posterior.

But what interests us really is to consider that the location of the first jump, of the first compression on the material face and non successive Geometric face will be realized between the location of the first Clockwise compression and the location of the first standard compression. The machine will thus possess a not only a contrary dynamic, but also a contrary movement in which the number of faces and the sequence of realization can be identified rigorously, and consequentially be realized as its motor form and not as its differential or compressive forms. (fig. 47.1, 47.2 , 48.1,)

As previously, for a same material figure, many Geometric figures are possible, and for a same group, many Sequences of realization of the geometric figure , called Sequential figures, are possible. (Fig. 48.2) For example, we'll note, for a triangular paddle, two sided cylinder figure, a eight sided Geometric Figure, and a procedure by jumps of three sides, which would allow the paddle to realize eight compressions in Alternative Stepmovement (Fig 42 to 49). We'll take note to read more attentively our patent application deposited antecedently to the current to take in account the multiple possibilities and varieties of this contribution. For the means of the current, it is however of an absolute necessity to say why this type of figure is necessary and to realize that the contribution of these realization and distinction criteria are essential to rotativo circular machines. T*his contribution is necessary since it allows the realization of contrary movement figures by determining the point of the next explosion of any figure, independently of its material or (virtual) Geometric characteristics.*

This contribution will thus allow, from material figures realizing a good compression, for example three of two figures, to realize Geometric figures realizing an acceptable number of explosions, for example figures with eight or twelve sides, but in addition to do this from a sequential figure possessing many real faces, *this having for consequence that each explosion will be contrary, since it will not realize the next successive material or virtual explosion, and is inside the Clockwise/standard realization limits.*

It is thus important to note here that not only Geometric figures are independent of the side rules of material figures, but in addition that the Sequential figures, are themselves in part independent from material and Geometric figures. It is principally why we say that

the realization of Turbinary engines offers motorists a much freer possibility in comparison to that of standard rotary machines

It is finally important to observe that when we are realizing, for example, a post rotary trochaic paddle material figure in a geometrical figure of a higher number of sides, some sequence of figure of the geometrical figure will be near that of the translational motion. For example, in figure 48 and 49.2, in which the number of sides of the geometric figure is, for one, of seven, and of twelve for the other, the realization of, respectively, a two step , and a four step would be pertinent , because, if the paddle and the cylinder are running in the same sense, than if the mechanic is of a retro rotary nature, these having a higher inner translational motion . The rotation of the cylinder will be slow and the push on the paddle more centered that in the back.

Mechanical support processes (51,52,53,54,55)

Circular, non clockwise, rotary machines can be supported by the same technical proceedings as translational movement machines. It is however important here to specify that they will have a hybrid character, which will respect the Material, Geometric and aspects of the machine. In fact, the length of the reach of the crankpin or of the eccentric that the material figuration will remain efficient. The chosen mechanic will comprise this length.

When the figures are realized Geometrically but linked, we'll use the retro rotary mechanic of the Geometric figure. For example a post rotary triangular paddled, two sided cylinder machine will have a standard length crankpin. But if this machine has a virtual square cylinder, triangular paddle retro rotary form, the mechanic will be of retro rotary type.

In the case of successive, non step Sequential realization of the Geometric figure, Geometric figure compressions, but in which the number of sides of the cylinder is not linked to that of the paddle, we realize a mechanical induction corresponding to the Geometric figure , taking in account the angle differences of the sides of the Material Figure and of those which should comprise a connected Geometric figure. For example, a triangular paddled figure turning in a six sided Geometric figure will more rotate on itself per rotation.

In the case of contrary movement of an Alternative Sequential Figure machines, we'll need to, as previously, all while conserving the length, calculate the retro rotation of the paddle in such a way to realize the desired jumps, realizing the most often the group of Geometric sides on more than one rotation. Consequentially, in the case of even Geometric figures, the Sequential figures will generally be odd, and inversely in the case of odd Geometric figures, the Sequential Figures will be even. It is evident that what we said at page 53 , '' the paddle mechanic and the positioning of the accessories and elements could be realized according to this Geometric form '' continues to be applied,

and this time, for the mechanic and the positioning of the accessories, in conformity with the additional Sequence figure.

Vertical and figurative levels of machines and horizontal and dynamic levels of machines

We can thus summarize the first part of our works by saying that we have, so to speak, exposed, the vertical level of machines, and in other terms, the way to elevate the machine degree by layering or other cylinder modification methods, such as the use of polycammed gears.

In the current work, we'll show that the machines can be modified in their degrees, but this time dynamically. We'll show that the translational dynamic, presented in the first part has a value not only due to its bi rotary qualities, but also a systematic value since it allows to realize a cutting away between differential, anterior, and posterior machines and consequentially, compressive type machines and contrary type machines, in which the unity is the first representation.

We thus have a vertical and horizontal development level for machines. In the current section, we want to add that these two levels are not incompatible. We can in fact increase figuratively the degree of a rotativo-circular machine, as we can inversely increase (rotativo circularly) a standard machine.

It's for example what is produced when we increase the degree of a rotativo circular Clockwise movement machine by realizing, for example, an oscillatory paddle, by polycammed gears of one to one. (Fig 35a) We have thus figuratively increased the degree of the machine.

We can for example increase the degree of a Turbinary clockwise paddle movement machine by realizing it not with a simply rotary cylinder, but a planetary one. This procedure can prove to be very interesting if this cylinder is bi functional, in other words, if we also intend to use it as exterior paddle. This will notably the realization of retro rotary translational contrary machines, with contrary eccentrics.

Counter-machines: planetary cylinder/fixed paddle, and translational cylinder/planetary paddle machines (fig 23, 24)

We must mention here that the forms of machines in their inversed state, which we have named counter forms, are realizable in the standard manner *by realizing the cylinder and paddle in the orientation opposite to the original orientation, and by granting to the cylinder, the same mechanics as the original.*

For example, a triangular machine form, is, when the cylinder is planetary and the paddle is fixed, has an orientation opposite to a post rotary three paddle sided, two cylinder sided machine and uses the same mechanics as it. This is why, in lack of its form, this machine remains post rotary.

This is also why, the rotary cylinder can at once be realized bi functionally and on its exterior surface realize the paddle of a standard machine.

The same procedure is realizable for Turbinary machines, and notably (clockwise) translational paddle movement machines (Fig 56, 57).

We can realize the machine this time with a Translational cylinder movement, opposite to its initial position, and a rotary paddle movement. We could then use the exterior cylinder surface as Clockwise paddle of a superior system.

Let us finalize by saying that the determinative scales already shown for standard dynamics are also true for the figurative counterparts. Thus, we can place machines in a series of dynamics, in rotational double from point zero, of translational cylinder (Fig. 23) , then in planetary cylinder, and realize differential and contrary Turbinary groups between these parts. Let's say , that , in certain cases, for un same Material figure, the Turbinary movement may be when the degree of the machine is higher on both sides. We must also state that the ratios of the components of the induction continue to be organized in relation to the Geometric figure, and to the Sequential figure. Finally, as for the kinetic organization of lower degrees, the position of exterior elements continues to be in relation with the figures.

Wankel's overcome semantic gaps

As we have specified at the beginning of this work, Wankel rationalizes effectively retro and post rotary machines of the previous art, when they are realized with planetary paddles and fixed cylinders. For these figures, it is rather the only two mechanics which Wankel proposes which have become the default, always realizing, as we have shown, counter forces which are harmful to the machine's motor qualities. In many other areas, however he seems to make errors by semantic inversion or omission, which literally prevents him from systemizing the plans of the machine. We think that the group of these gaps is corrected here and the corrections brought forth are inscribed in a superior machine comprehension.

We'll summarize these errors as follows:

A) Relatively to planetary cylinder machines, there is directional error or omission or mechanization contradiction. In fact, the correct direction of these machines is complementary to the direction of their counter part, and the mechanic must not be that of the figure, but rather that of the counter part. A correct comprehension of these elements allow, as we have shown, to realize the cylinder perfectly bi functionally.

B) Relatively to rotary cylinder and paddle machines, their direction must be inversed since according to the rule which we have given, the next expansion taking place in the same location, the paddle must realize a retro rotation of one hundred and twenty degrees, and the rotary cylinder must undergo a retro rotation of one hundred and eighty degrees. This re-orientation of the machine allows us to consider it as the octave machine from the chromatic scales.

C) The rotor cylinder machine realizes a virtual paddle figuration of a square cylinder machine, and becomes differential retro rotary, which lowers the motricity of the machine. The comprehension of this machine is incomplete, not only by absence of the general rule, but also by the absence of the clockwise movement machine, and by the absence of the establishment of virtual and real figures. As Fixen's, Cooley's, and Mallard's figures, this figure is an isolated realization and is not systematic.
In addition, as before, we note a mechanization absence of this figure, which would have shown the retro rotary character, and the necessity of semi transmission or of descending inductions.

D) The ignorance of bi inductive figurative figures, being the poly turbines, and dynamic figures, being that of Clockwise paddle or cylinder movement machines

E) The absence of establishment or determination of mechanical figuration or dynamic levels

F) The absence of mechanized accelerative / décélérative dynamics

G) The absence of knowledge and use of polycammed gears, which allows the support of figures impossible for Wankel, such as differential turbines, Slinky machines, and machines with oval, square form paddles and cylinders, and so forth.

Machine determinations (fig. 50)

One of the qualities of the advancement of any theory - scientific, artistic, or lingual - is the increase in the capacity of determination criteria of the object on which or by which is realized. We pass progressively from a universe of symbols to a more subtle, complex articulated language.

If we compare Wankel's works to those of the inventors of the previous art, we notice that, on this level, Wankel's contribution was to bring new rational and generative criteria of machine comprehension..

In fact that for the inventors of the previous art, each machine has its autonomous configuration and remains without mechanical *modus vivandi* relative to the aspect, with

Wankel, we insist in the enunciation of rationalization criteria which are those of serializations of cases of first degree machines and of mechanization.

We can thus say that we find with Wankel the elaboration of these two criteria, one of figures, and the other mechanical. The figure criteria allows a classification of figure types which we have named post and retro rotary.

As for suspension criteria, we see that they remain in the order of figure criteria, one part, knowing that the proposed mechanizations are strictly post or retro rotary, and on another part, they are limited to two, being the post or retro rotary mono induction, and the mechanic by post or retro rotary intermediate gear.

Always relative to figures, we can from Wankel logically determine the figurative situation of a machine of one class to that of a same class by comparing the number of sides, according to the sides rule. We'll thus say that it is the case of a machine of 3:2, of 4:5, of 7 these values corresponding to the number of paddle and cylinder sides.

We can, from these criteria, analyze standard machines. For example, for the case of commercial type engines, we'll say that it is:

Engines

1) of post rotary class

   a) Of 3:2 paddle cylinder characteristics
   b) Of support by post rotary mono induction, or reductive

We can suppose, as a second example, the realization of a machine in which the paddle has the same number of sides, but its cylinder has four. It would therefore be:

2) Of retro rotary class

   a) Of 4:3 paddle cylinder side characteristic
   b) Of mono inductive support
   c) Of retro rotary or counter type support type

As we have shown, we can produce an almost unlimited number of machines which can't be totally comprised by the only criteria of the previous art, which was very confined and limiting. We think that a correct comprehension of these machines require a much larger group of criteria.

These criteria are sufficient to understand a part of these machines, even of first degree. Let us give a few examples. If we suppose a machine of a 3:2 figuration, but supported by a hoop gear realized in the shape of a chain, the machine mechanic will remain unexplained, if we have but the criteria of the previous art.

We'll determine the machine in the following way:

Standard 3:2 paddle cylinder
Hoop gear mechanic, used as a chain

We can even suppose the realization of a machine with a unitary paddle compression group, in counter direction, retro rotary and supported by a hoop gear mechanic with a third angular gear

We'll consequentially determine this machine in the following way :

a. retro rotary class
b. Geometrical figure 2 X 3 :2 characteristic
c. compression doubling internal explosion
d. hoop gear support
e. bi rotary support

Let us give another example.

In this example we realize a triangular, layered support engine, and in addition with an accelerative /décélérative paddle action. The machine is thus characterized as follows:

A) retro rotary class
B) second rotational degree
c) in height sides
d) master mono induction and by peripheral hoop gear, or secondary, support methods
e) rounded cylinder
e) polycammed **(accelerative / décélérative**) gear mono induction
f) rounded cylinder forms and counter forms

Let us give another example. In this case, we realize a machine in which the compressive figure is issued from our generalization of Wilson's base figure, and in which the retro rotary mechanic and with geometric addition is our own.

The machine can be described as follows

A) Bi rotary class
B) Compressive part by paddle structure

C) 6:3 number of sides
D) bi rotary mechanic
E) by first degree mechanic
F) mechanic modification by geometric addition

Let us give a final example. Here it will be the case of a Contrary Movement Turbinative machine with a material paddle and cylinder of three to two and a real cylinder of eight sides.

The machine is therefore:

a) post rotary material class
b) of contrary rotary circular type
c) of slinky dynamic
d) of material 3 :2 figurations
e) of Geometrical Figure « leap of three » figuration
f) of real 3:8 figuration
g) of mechanic by combinatory link by the support gear
h) of semi transmission mechanic by pinion gears

As we can state, other than the mechanic before the regularization structure, being that of retro rotation mechanic, there is no criteria belonging to the criteria of Wankel or his predecessor, and he could not have realized a correct report of this machine.

The number of examples of machines being partially or totally determined by the criteria not belonging to the previous art is almost unlimited.

It is almost impossible to index all possible machines, only being described by Wankel's and his predecessors' limited systematic. The way to enclose all of these possible machines is that of their determination from a descriptive and rational grid, indexing all the constituting characters of machines, such as Wankel has given us a base for, and which we have completed in parallel to our works.

This determination grid will be comprised of generative criteria which could be applied to all machines, which will assure to each of these criteria the generality necessary to allow considering them to this title.

These criteria are:

a) The machine class, post rotary (Wankel, Beaudoin), retro rotary (Wankel, Beaudoin), bi rotary (Beaudoin)
b) The number of paddle cylinder sides Retro rotary (Wankel), Post rotary (Wankel), Bi rotary (Beaudoin)
c) The first degree mechanic used : mono induction (Wankel)
   Intermediate gear (Wankel)
   Hoop gear (Beaudoin)
   With third gear, chain, belt (Beaudoin)
   By poly induction (Beaudoin)
   Method by semi transmission (Beaudoin)
   Method by hoop gear (Beaudoin)
   Method by intermediate gear (Beaudoin)
   Method by heel gear (Beaudoin)
   Method by internal juxtaposed gears (Beaudoin)
   Method by internal superposed gears (Beaudoin)
   Method by central post active gears (Beaudoin)
   Method by gear like structure (Beaudoin)
   Method by unitary gear (Beaudoin)

d) The type of paddle: Standard (Wankel, Beaudoin. Fixen , Cooley) ;
   Simple paddle and cylinder group (Beaudoin)
   Paddle structure (Wilson, Beaudoin, St-Hilaire)
e) The type of dynamic: regular (Wankel Beaudoin)
   accelero decelerative (Beaudoin)
f) The machine degree
   Vertical figurative (Beaudoin)
   Dynamic (Beaudoin)
   Mixed (Beaudoin)

g) The type of second degree mechanic : by dual or tri parted poly induction (Beaudoin), by anchoring in the points (Mulling), in tri parted descending anchoring, by positional support in the centers of the sides, or in intermediate parts (Beaudoin)
h) The type of corrective mechanic allowing the realization of obtained degrees: by runner (Beaudoin), by geometric addition (Beaudoin), by oscillatory action (Beaudoin), by induction layering (Beaudoin)

i) The type of machine nature
   Planetary paddle – fixed cylinder (Wankel, Beaudoin)
   Planetary cylinder – fixed paddle (Wankel, Beaudoin)
   Bi functional paddle cylinder (Beaudoin)

j) The type of dynamic
   Standard (Wankel, Beaudoin)

Rotativo circular retro (Wankel, Beaudoin) or post rotary (Beaudoin) differential
Contrario (Beaudoin) by clockwise movement (Beaudoin) and planetary movement (Beaudoin)

k) The degree Materiel (Wankel, Beaudoin)
Virtual (Beaudoin)
Real (Beaudoin)

L)The type of paddle compression (Wankel, Beaudoin)
with pistons (Beaudoin)
M) By Alternative Sequential realization of the Geometric figure (Beaudoin)

N) The type of material figure used Standard figure (Cooley Fixen Wankel Beaudoin)
Rounded (Beaudoin),
rectangularised (Beaudoin)

O) Counter part figure
Planetary cylinder/Fixed paddle (Beaudoin)
Clockwise cylinder/rotary paddle (Beaudoin)
Bi functional figure (Beaudoin)

Conclusion

First of all, for a good number of researchers, it is of evidence that the indexations, rationalizations, and mechanizations of Wankel offer themselves as an opaque matter, hermetic and insurmountable. The key elements are reduced to their greatest simplicity, and that we don't see that it's this very simplicity which is faulty.

As we verify frequently however, with time however, as for all theory and system, we notice after the appreciation errors, the mechanical gaps, and finally the rational contradictions and the various enterprise limitations.

Bit by bit, as we'll finish demonstrating here, these gaps and their corrections will make room for new perspectives, and the exceptions will progressively show their qualities of hidden rules, which will generalize themselves to such a point to result in new motor machines, much more perfect. We could then proceed to rationalizations allowing the understanding of more machine characteristics, more machines, more mechanics, more base machine variants. In addition, the new units, issued from correction concepts will allow the realization of more liable, stronger, more fluid, and consequentially, which is most important for all, privileged machine units, which we have named rotativo-circular, realizing qualities from piston machines, rotary machines, and turbines, without realizing the defaults.

The Turbinary machine are machine that archiving new kinetic between paddle and cylinder, and between these cooperatives parts and the bloc , in integrating geometric component that will assure the pertinent cyclic realization of the machine. The controlled cyclic realization in relation to the bloc will permit to localize the emplacement of the hole , in the bloc , by witch the gas in take, and exhaust will pass tru the holes of the cylinder. The cyclic determination will permit to realize non only the good type of mechanical induction, but also the good ratio. (Fig 56)

Summary figure description

Figure 1 a comments the figures of the previous art, in matters of rotary machines, strictly retro rotary engines, in which we can observe the relationship of the number of sides of the paddle, in relation to the number of sides of the cylinder.

Figure 1 b) is showing progressive development of the rotary engines, in which is developed the tendency to dispose the ring on the piston, and not on the cylinder , in post rotary, Herman, and retro rotary , Fixen, Cooley

Figure 1 c) shows that inventors continue to elaborate engines with new numbers of paddle and cylinder sides. The trochaic paddle, disposed in double arc cylinder has its origin in Mallard. Post rotativo of four to three, and five to four sides have not been showed by Fixen. The figure also represents the first serial arrangement realized by Wankel.

Figure 1 d shows , for the same trochaic piston the support par mono induction, and the support by poly induction , and the machine of the poly turbine type (Wilson 1975 , Beaudoin 2001) , (St-Hilaire 2002)

Figure 2 shows the group of Wankel's first degree methods, as well as those which we have elaborated beforehand.

Figure 3a) shows the main methods of increasing the mechanical degree which we have also elaborated beforehand.

Figure 3 b) shows a comparative realization of second degree retro rotary and post rotary cylinders in comparison to standard retro and post cylinders,

Figure 3 c) shows that paddle and cylinder structures of poly turbines can be organized in a serial comprehension

Figure 4 illustrates , from our previous work, some sketch of cooperative dynamical paddle and cylinder

Figure 4 a) shows that we were thinking that the movement of the paddle , to be associate with the rotational movement of the cylinder dad to be alternative and rectilinear , what is like we see , not realizable.

Figure 4 b) shows that we were thinking to that center movement of the paddle had to describe a geometrical a geometrical form. This never realize an only two degres of liberty machine, and we dint submit any dynamical figure for the sketch .

Figure 5.1 shows, more particularly the mechanical support by polycammed gears, witch is permitting to realize a superior degree of liberty in standard kinetic of rotary engine. Like we will see lather, it will be possible to realize Turbinary machines with the polycammed gears.

Figure 5.2 shows the semi transmission that we realized to realize a dynamic central support gear of standard rotary machine. Ads we will see, these techniques will be utilized in Turbinary engines to motivate the cylinder.

La figure 6 a , shows how the pressure of the explosion is configured in the engine anterior to Wankel. We can see that these machines are powerful, in terms of thermodynamic, because the explosion is occurring at the top of the head of the piston,, and when it is at its higher position.

Figure 6 b, shows Wankel's two inductions, being those of mono induction, and that of intermediate gear induction

Figure 7.1 a) shows the view of an exterior observer of a standard kinetic machine

Figure 7.1 b) shows the view of an observer of a standard kinetic machine , disposed on the eccentric

Figure 7.2 a) shows the method of observation by *specific* exterior. This method consists to observe, by an exterior observer, the movement of a specific point of the paddle in course of its planetary rotation. In a) the point which is observed is the point of the paddle

The figure 7.2 b)shows the kinetic view of a point which is situated in the center of the surface of the paddle

The figure 7.2 c) shows the kinetic view of points which are situated neither in the center of the surface of the paddle or in the points of the paddle

The figure 7.2 d) is combining the a and b kinetic

Figure 7.2 e shows that the a and b kinetic may be simultaneously realized by a poly induction structure

Figure 8 a) presents, in a) that the comprehension of the geometric dynamic of the paddle realized by the poly induction is totally opposite to that of the previous art.

Figure 8 b) of the same figure, we see that, no matter what the position of the centers of the subsidiary crankshafts during their total elevation, the explosive push on the paddle remains, in lack of the double part poly induction, always equally distributed.

Figure 9 a)shows, by which type of observation we have obtained the perfect coordination of translational and retro rotational movement, showed in the previous figure . We have named this observation, *observation from the master crankshaft* of poly inductive machines.

Figure 9 b) separates the observation of the movement paddle, and that of the cylinder

Figure 9 c) shows that we can materially let free the other components by handling firmly the master crankshaft of a poly induction machine in a tool..

Figure 10 shows the first complete kinetic realization of the present invention. In a bloc, the paddle is describing a translational movement witch is cooperate with a strictly rotational movement of the cylinder. Here, the specific translational dynamic of a post rotary three sided paddle, is realized in a two sided cylinder figuration machine, this cylinder realizing a strictly retro rotational movement. This illustrates the principal and basic kinetic figures of the present invention.

Figure 111 a) is giving in a the forts total arrangement of a complete clokwise Turbinary engines, comprising the bloc, the compressive parts, and the mechanical components

Figure 11 b) is showing the realization in a transversal cut

Figure 12 a shows the top position of elements in a mechanical poly induction support method

Figure 12 b shows the position of the elements at the next compression

Figure 12 c shows that the relationships are respected in Translational Turbinary engine, but are distributed differently, so that the work of the master crankshaft is done by the cylinder.

Figure 12 d shows the position of the elements at the next compression, for a standard machine.

Figure 13 a) summarizes the mechanical difficulties and weaknesses of standard rotary machines, consequential to the previously stated gaps.

Figures 13 b) exposes the fundamental and important qualities that are bringing the idiomatic Translational/ rotational Turbinary machine of first degree

Figure 14 shows that the Translational/ rotational Turbinary elementary dynamic is situated halfway between standard piston dynamics, rotary, orbital, turbine and rotor cylinder. This is why we have named them *rotativo-circular machines,* or even *rotativo-turbines,* or finally *rotativo-orbital.*

Figure 15 shows that standard mechanical means can be utilized to control the Translational movement , and that all first degree induction obtained from observation on the crankshaft, if it is realized in a ratio of a support gear and an induction gear of one to one, can realize the Translational guidance of the paddle from the center.

In figure 15 a 1, the one to one ration is realized by mechanical intermediate induction

In figure 15 a 2, the one to one ration is realized by mechanical hoop induction

In figure 15 b 1, the one to one ration is realized by mechanical heel gear induction

In figure 15 be, the one to one ration is realized by mechanical semi transmittive induction

Figure 16 a) differentiates ascending inductions and the descending inductions. The ascending inductions are standard first degree inductions, or even, as we have seen in the layering of inductions, peripheral inductions, allowing to assure the support of the paddle.

Figure 16 b) summarizes the first two types of semi transmission, accelerative /décélérative , and shows how to realize them confoundedly.

Figure 16 c) shows mechanical inductions that are accelerating the parts in the same or contrary direction

Figure 17 a) summarizes the three important support methods of rotativo circular machines. We can consider that rotativo circular machines are the horizontal expression of layered support structures, presented by ourselves beforehand.

Figure 17 b) of the same figure, the paddle induction is realized by an intermediate gear induction.

Figure 17 c), the elements will here be connected by a same gear, which will serve at once as a dynamic paddle support gear, and as an induction gear from the axe to the cylinder.

Figure 18 specifies that the Translational / Rotational motion is pertinent for all Material figure of paddle and cylinder of the art. We will call this figure, the Material Figures of the machine. In post rotary figures, the Translational movement of the paddle is associated to a retro rotational movement of the cylinder. In retro rotary Material figure, the translational movement of the paddle is cooperating with a rotational cylinder running in the same direction.

Figure 18 a) shows a trochaic paddle cooperating with a double arc rotational cylinder.

Figure 18 b) shows that in retro rotativo figures, the movement of the translational paddle is in the same sense as that of the cylinder.

Figure 18 c) we show that the translational movement is effective for all the figures of post rotativo machines . Here we have a square piston moving in translational motion in a retro rotational triangular cylinder

Figure 18 d) shows that the translational movement is effective for all figure of retro rotary machines . Here we have a triangular piston moving in translational motion in a post rotational square cylinder

Figure 18 e) shows that the translational movement is effective for all figure of post rotativo machines . Here we have a five-sided paddle moving in post translational motion in a retro rotational square cylinder

Figure 18 f) shows that the translational movement is effective for all figure retro rotary machines . Here we have square paddle moving in post translational motion in a post rotational fifth sides cylinder

Figure 19 a) specifies that even bi rotary type machines, as for example poly turbines (in a and)

Figure 19 b) that the poly induction mechanical way of support stay pertinent

Figure 19 c) , shows that the Turbinary kinetic is also possible for the Quasi turbine, which are realizable in the manner of rotativo circular machines.

Figure 19 d) shows that these machines are also realizable for any number of sides. Here the rotativo-circular poly turbine with a six sided paddle structure in a triangular rotary cylinder.

Figure 20 a shows that the Turbinary dynamics can, from already commented correction mechanics, notably the use of polycammed gears, for standard machines, be realized in an accelerative and décélérative way

Figure 20 b shows that in these cases the cylinder curves will be modified.

Figure 21 shows that the Turbinary machines can be realized with different paddle types. In figure 26 a , we are reminded of the basic translational kinetic of Turbinary machines.

Figure 21 b) shows that each of the simple sided paddles can realize the translational movement in coordination with the strictly rotational one of the cylinder

Figure 22 a) shows that the polycamation of induction or support gears can be realized not to accelerate/decelerate the positional movement of the paddle, but to modify alternatively the movement of the paddle, making it thus, oscillatory translational

Figure 22 b shows that this can be obtained by polycamed gears, here coupled to a chain.

Figure 23 shows that as for standard machines, we can realize the machine with a center/periphery inversion of the dynamic of the compressive parts In part a of the figure , we see a translational movement of the cylinder , realized in relation with a strictly rotational movement of the paddle.

Figure 23 a) is realized with post rotary material figure of paddle and cylinder.

Figure 23 b) realizes the same thing than in a) but, here, with a retro rotary material figure of paddle and cylinder.

Figure 24 a) shows that even inversely, the cylinder can, like the paddle, be in a single multi faced piece, in a), many simple faced pieces,

Figure 24 b) shows external paddle structure running during the rotational movement of the center piece,

Figure 25 compare, for a paddle of two sides, and and cylinder of one, the kinetic of a standard machine, and of a Turbinary machine. We see, here that we double the compression of the machine.

Figure 25 a) shows the standard kinetic

Figure 25 b) shows the Translational Turbinary kinetic.

Figure 26 shows that other planetary movement may be realized win combination of a rotational cylinder. The figure shows also that rules of cooperation a planetary paddle and a rotational cylinder haven't to be completed by rules of cooperation with the bloc. The two example her shows that the displacement of the compressive parts is not pertinent with the bloc.

Figure 26 a shows a first non pertinent of cooperation compressive movement to the bloc of the machine.

a first non pertinent of cooperation compressive movement to the bloc of the machine.

Figure 26 a is giving as an example of kinetic complicity of paddle and cylinder , so that we can understand the rule of the cylindrical counter part. This counter part rule is a generalization, and is applicable no matter the location of the new projected explosion.

Figure 26 a shows an example in which the paddle and cylinder are moving in the same positive way. The retro rotation of the paddle, at its next top point in relation to its eccentric is inferior to the standard of 90 degrees, The cylinder will have to rotate 90 degrees to compensate for this difference.

Figure 26 b is showing that the next top point of the paddle may be at an other emplacement. For example, after 100 degrees of eccentric rotation, the cylinder will have to turn 80 degrees.

In figure 26 c, the next top of the paddle in relation to its crankpin or eccentric occurs after a rear movement of 110 degrees, so 70 degrees of less than the 180 which are necessary to realize the standard motion. So the cylinder will have to be placed in a retro rotation of 70 degrees.

Figure 27 is giving a second example of cooperation of compressive parts , when the paddle is non Translational.

Figure 27 a is showing the standard kinetic.

Figure 27 b is showing a displacement of the two compressive part, in a positive direction.

Figure 27 c is showing a displacement of the two compressive part, in a negative direction.

Figure 28 gives a first example of a more complete dynamic allowing to make appear these figures which we'll name, by opposition to *material figures,* Geometric figures. These figures will assure synchronization of the cooperative motion of the compressive parts to the bloc of the machine,

Figure 28 a) shows the paddle in relation to its material cylinder, and in relation tho the Geometrical figure.

Figure 28 b) shows the dynamical cooperation of the paddle and cylinder, simultaneously to the cooperation of them to the bloc of the machine.

Figure 29 gives a second example of a material and Geometrical figure.

Figure 29 a) shows a Material Figure of a trochaic paddle in a double sided cylinder.

Figure 29 b shows that the material figure paddle will cooperate with a square retro Geometrical figure, similar to the retro rotary counter figure for the same paddle.

Figure 29 c shows the kinetic that will be realized

Figure 30 re-exposes the continuation of the positions of a machine in Translational movement. As we can state, the originality of this type of machine is to describe a limit point between two areas of the scales of rotary machines.

Figure 30 a) shows the material Figure

Figure 30 b) shows the Geometrical Figure

Figure 30 c) shows the dynamical realization of this arrangement

Figure 31 shows that we can inversely diminish the number of sides of the virtual figure in relation to the standard figure, which implies, in the measure where the compressions will be successive, which we'll realize a differential posterior form.

Figure 31 a) shows, in a, the standard material ratios of a trochaic paddle in relation to the cylinder , 3/2

Figure 31 b shows the standard ratio for a two sided paddle, of post rotary type, the cylinder having one side.

Figure 31 c shows that , if we intend to realize a machine with a dynamic cylinder, it is absolutely important first, to determine its speed in cooperation to the paddle , and second , to determine , in relation to the bloc, the figure of displacement of the paddle , witch will produce pertinent cycle of the machine, obtained by the geometrical Figure . here , the trochaic paddle runs simultaneously ina double arc Material figure, and in a single arc Geometrical figure.

Figure 32 shows that consequentially we can by adding or subtracting from one side of the Geometric cylinder, transfer a post rotary machine, in rotary machine and vice versa.

Figure 33 shows that this is true for all figure forms. We have here, as an example, in a, a triangular paddle machine, in b a square paddle machine, in c a five sided paddle.

Figure 33 a) shows that the trochaic paddle , working in a double material cylinder, may either produce a post rotativo Geometrical figure on one arc, or a retro rotativo geometric figure of four sides.

Figure 33 b) shows that a square paddle running in its material cylinder of three sides, may realize , in its dynamic, a double arc Geometric figure, or a retro rotativo Geometric figure of five sides

Figure 33 c)shows that a pentagonal paddle running in a four-sided material cylinder, may either produce a four sided Geometric figure , or a six sided geometric figure

Figure 34 a) shows that the realization of synthetic figures are just as true for retro rotary figures as post rotary figures. In a of the figure, the post rotary type of the material figure , a trochaic paddle in a double arc figure is running in a square Geometric figure.

Figure 34 b) shows a retro rotativo material figure of a trochaic paddle running in a square cylinder, realizing, dynamically a double arc Geometric figure

Figure 35 shows that the realizations, for a same material figure, the Geometrical Figures are not limited to the figures of a number of sides superior or inferior to one.

Figure 35 a) showing a trochaic paddle in its material double arc cylinder.

Figure 35 b) shows that the geometric figure which will be dynamically realized by the trochaic paddle will be a pentagonal one

Figure 35 c) shows the kinetic realization of that Geometric figure

Figure 36 shows that the process showed at the last figure may be realized in both sides. The figure shows the compression in relation to the standard motion.

Figure 36 a) shows the standard motion and the positions of compression.

Figure 36 b) shows the emplacement of the compression, which are exactly conform to the geometric figure exposed at previous figure.

Figure 36 c) shows the emplacement of the compression, which are exactly conform to the geometric figure exposed at precedent figure , with the exception that in that figure, all the components are working retro rotationally

Figure 37 shows what is happening when the geometrical figure is realized by successive sides, and when the number of sides is higher that the counter form cylinder.

Figure 37 a Shows the kinetic of a pentagonal Geometric figure, and the displacement point of the end of the paddle.

Figure 37 b shows the Material figure, the Geometrical figure, the Sequential figure, and the Displacement Figure for this kinetic.

Figure 38 is showing an other example, with a six sides Geometrical Figure.

Figure 38) Shows the material the material Figure, The geometrical figure and the sequential figure

Figure 38 b) is adding the Displacement figure

Figure 39.1 shows that in reality, we can realize, for a same material figure, all the base geometric figures as virtual figures.

Figure 39.1. b, shows the number of sides of the Geometrical Figure may be decreased , here to one side

Figure 39.1. c , shows that the number of sides of the geometric figure is not limited to only one side or more, like in the previous example. The figure shows that the dynamic process allows us to liberate the construction of the machine from its strict side-relationship of the art. Here the Geometrical figure may have, as we can see, four , five, six seven eight sides or more.

Figure 39.2 shows that this is true for all figures, and gives the example of a post rotary square paddled material figure.

Figure 39.2 a shows the material post rotary figure , the square paddle running in a triangular cylinder.

Figure 39.2 b shows that the number of sides of the Geometric figure may be decreased

Figure 39.2 c shows that the number of sides of the Geometric figure may be higher.

Figure 40.1 shows that we can realize the Geometrical cylinder of a machine by realization of each of its faces non successively, by jumps. For example, for a triangular paddled post rotary machine, realize this machine by locating each compression by jumps of eluded faces.

Figure 40.1 a) is showing the Material figure of the machine.

Figure 40.1 b) is showing the Figure of Sequence of Realization of the Geometric Figure

Figure , 40.2 b) gives the kinetic expression of the Figure of Sequence of Realization of the Geometric Figure exposed at the figure 40 . On can see that the paddle compression and expansion positions .

Figure 40.3 presents the same dynamic, but keeps only the compression position, which will be in four stroke, and alternatively, the exhaust and the explosion of the engine.

Figure 41 shows that, since the course of the non successive faces are possible, the continuations of synthetic courses, which we'll also name real courses, are multiple for a same virtual figure.

Figure 41 a shows the material trochaic paddle and double arc cylinder figure

Figure 41 b shows , for the same pentatonic Geometrical figure, different Sequential figures of realization for the geometric figure

Figure 42.1 thus enlarges the construction rule of a cylinder's rotary value by stating that we must take in account not the (~~virtual~~) Geometric figure, but the virtual course of realization of this figure.

The figure 42.1 a) shows a material trochaic paddle

The figure 42.1 b) shows a pentatonic Geometric figure

42.1 c) The figure shows a pentatonic Geometric Figure realized in a succession of sides of the Geometric figure

Figure 42.2 realizes a Sequential, non successive, synthetic course, and which the jumps are realized in such a way to be located in the contrary movement area of the machine. Here, we elide consequentially a Geometric face to each compression.

Figure 42.2 a) shows the material figure of the machine

Figure 42.2 b) shows I the Geometric figure of the machine, and its preferable Sequence of realization.

Figure 42.2 c) shows the kinetics of the realization, were we can see the top points of the piston in relation to the bloc.

Figure 42.3 shows the same real and virtual forms, but once again, with a different synthetic course. Here, the jump is of two the sequence is thus the following; I : 1, IV : 2, II : 3, V : 4, III : 5

Figure 42.3 a) shows the material figure of the machine

Figure 42.3 b) shows I the Geometric figure of the machine, and an other Sequence of realization, here by two steps .

Figure 42,3 c) shows the kinetic of the realization , were we can see the top points of the piston in relation to the bloc.

Figure 43.1 summarizes the three previous figures and links concededly the synthetic course and the belonging of a realization to an area or another.

Figure 43.1 a) shows the material figure

Figure 43.1 b) shows the Geometric dynamic successively realizing the sequence of realization of the Geometric figure

Figure 43.1 c) shows the two non successive or step Sequences of realization of the Geometric figure

Figure 43.2 a) is showing that, inversely, when the number of sides of the geometric figure is augmented, but at the same time that the figure of realization of the geometric figure is realized by steps, the Figure of the displacement of points, here , of the ends of paddle , stay similar for each end , and is similar to the geometrical figure .

Figure 43 .2 b) shows that when the number of faces of the Geometric cylinder is augmented , and that the sequence of realization of the Geometric Figure continues to be realized by successive sides, the figure of displacement of points is different for each point and different from the geometric figure .

Figure 44 shows that certain figures, in which the number of sides is even and low enough bring back inferior figures.

Figure 44 a) shows the material figure

Figure 44 b shows a six sided Geometric figure, realized in a successive Sequence of realization

Figure 44 c) shows that when the six sided Geometric figure is realized by a one step Sequential realization, we make a translational dynamic

Figure 44 d) shows that when the six sided Geometric figure is realized by two step Sequential realization, we make a standard dynamic. So we can say that, in standard dynamics, material, Geometric and sequential figures are the same.

Figure 44 e) is showing that in standard dynamic, the Geometrical figure is by alternative opposed sides

Figure 45.1 shows various real courses of a virtual seven sided figure for a post rotary material figure with a three sided paddle.

Figure 45.1 a) shows the proposed Material figure of the machine

Figure 45.1 b) shows a seven sided Geometric figure, with different Figures of Sequential realization , starting at the successive one, and after, by steps of one, two and more sides.

Figure 46 shows that certain figures, in which the number of sides is even and low enough bring back inferior figures.

Figure 45.2 a shows the material figure

Figure 46 b shows an eight sided Geometric figure, realized in a successive Sequence of realization

Figure 46 c) shows an eight sided Geometric figure, With a different Sequential realization , starting at the successive one, and after, by steps of one, two and more sides.

Figure 47.1 shows that more the number of sides increase, more the number of possible courses increase, and consequentially contrary direction courses.

Figure 47.1 a) shows the material figure

Figure 47.1 b) shows a nine sided Geometric figure, realized in a successive Sequence of realization

Figure 47.1 b) shows a nine sided Geometric figure, with different Sequential realization , starting at the successive one, and after, by steps of one, two and more sides.

Figure 47.2 reminds that each material paddle figure has its specific surface and that more the paddle has of sides, more the contrary surface is restraint.

Figure 48.1 summarizes the previous figures, and shows, in a single figure, that many Geometrical figures are possible for a same material figure, and that many synthetic courses are possible for each virtual figure.

Figure 48.2 shows, for a rotation, this time, a material post rotary figure of four to three sides of paddle and cylinder, realized on a ten sided virtual structure.

Figure 48.2 a shows the material figure

Figure 48.2 b) shows one preferable kinetic, with a ten-sided Geometric form, and where the Sequence of its realization is by steps of two sides. This will ensure that the next compression will be between that of a standard and a translational one.

Figure 48. 2 c) shows the realization kinetic of one machine, producing ten compressions per rotation.

Figure 49.1 shows, inversely, that many material figures are possible for a same virtual figure and that each of them will possess a preferable contrary surface.

Figure 49.2 shows the scale of degrees of a machine with a material figure with a three sided paddle, and two sided cylinder. We can see here the differential anterior surfaces, realized when the explosion occurs before the clockwise movement of the machine.

Figure distinguishes, for the group of realizations of differential retro rotary, differential post rotary, and contrary movement, for machines.

Figure 50 shows that these degrees are reversed for retro rotary Turbinary machine

Figure 50 a) shows the different area for post rotary engines
Figure 50.2 shows the different areas for retro rotary engines

Figure 51 shows some mechanical arrangement for Turbinative engines.

Figure 51 a) shows a poly induction, semi transmission combination

Figure 51 b)_ shows a an intermediate gearing an descending induction combination

Figure 51 c) shows a combination af mono induction and semi transmission mechanical inductions

Figure 51 d) shows a combination of semi transmittive mono induction and descending mechanical induction

Figure 52 a shows the mechanic of the geometric movement of the paddle realized by semi transmittive mechanic of the rotary cylinder. Preferably, the dynamic support gear is fixed to the cylinder Figure shows a semi transmittive mono induction mechanical govern of the paddle, the semi transmission of it being either by conical gear, or by internal gear

Fire 52 a) is showing a semi transmittive poly induction mechanical govern of the paddle, the semi transmission of it being either by conical gear

Fire 52 b) is showing a semi transmittive poly induction mechanical govern of the paddle, the semi transmission of it being either by by internal gear

Figure shows also that each of these mechanics and semi transmissions can be standard, or poly inductive.

Figure 53 a) shows that we can increase the efficiency of differential piston engines by realizing them with rotor cylinders or added superior pistons. Figure shows in a) that the translational movement of a paddle may be obtained by intermediate gears which are themselves coupled to an internal gear. This will assure the subsidiary crankshaft to run perfectly at a similar speed. The cylinder will be fixed to the internal gear. In other words, we have a poly inductive semi transmission commanding the cylinder retro rotation, realized confoundedly with a fixed poly induction

Figure 53 b) shows a paddle governed by mechanical induction

Figure 53 c), the semi transmittive internal kind of poly inductive action commands the cylinder and the dynamic support gear of the ascending poly induction of the paddle 2 ,

Figure 53 d) shows an ascending paddle poly induction which leads to a descending cylinder poly induction

Figure 53 e) shows that a semi transmittive induction with pinion gears will lead simultaneously the cylinder and the support gear of the ascending semi transmittive hoop gear induction

Figure 53 f) shows a doubled semi transmission which leads both the cylinder and the central dynamic ascending induction gear by central dynamic gear (in b 6).

Figure 54 a) shows other possible mechanics, which are once again taken from the previously exposed composition rules. It is therefore important to repeat that these induction assemblies are exemplary. All of these inductions could be replaced by any other induction, depending on the case, standard, semi transmittive, ascending, or descending.

Figure 54 shows in b) , the poly induction activates the paddle, and is connected to a semi transmission by inversed pinions, activating the cylinder.

Figure 55 shows a transversal cut of a more complete Turbinary machine motiver by a internal semi transmission of a mono induction

Figure 56 shows a description of the machine when realized as an engine, and , were the machine is s product with a material trochaic paddle, in a double arc cylinder, a geometrical eight form , and a Sequential step realization by to step, this realization being the same as the one presented at figures 40, 40.1.1, 40 .1.2 and 46

Figure 57 summary of gaps in Wankel`s theory

Detailed figure description

Figure 1a) shows the main retro rotary figures of the previous art, notably those of Cooley. We can observe that in the relationship between the number of sides of the piston , and their relation to the cylinder is always that the piston has one side less than the cylinder. Effectively so, these machines are of the retro rotativo type. We can add that it may be observed that the top compression on the piston heads in these engines, is producing a double extension of the crankshaft and the piston. Finally, one can also observe that in these machines, the rings 2 will be disposed on the cylinder, which will create so many problems that Wankel that will be resolute be Wankel.

Figure 1 b), shows Wankel, Herman, and Fixen's work, who have mainly realized a modification of the base forms in such a way as to realize machines with a paddle segmentation 1 , by opposition to a cylinder segmentation 2, as in machines of the previous art. We also notice that the relationship of the number of sides of the piston and the cylinder stay the same after this modification.

Figure 1 c illustrate that the post rotary machine , the number of sides of the piston is superior by one to the number of cylinder sides. Post rotary figures of the art previous to Wankel, also segmented on the cylinders. In the second part of C) we notice Wankel and Fixen's figures in which 2), have) the set up of the segments has been realized on the paddles.

Figure 1 d) illustrates Wankel's two unique mechanics for planetary paddle machines, being mono induction 3 and by intermediate gear 4. We also see that when the machine is realized without eccentrics, the two piston and cylinder parts have a strictly rotational motion , which has also been realized by Wankel. This is the only dynamic variant for which Wankel has provided support mechanics.

Figure 1 e) shows two more compressive structures of the previous art, after Wankel. Specifically, they are Wilson's (1975) and Beaudoin (2001) poly turbine 5 and St-Hilaire's Quasiturbine 6.

Figure 2 shows the group of first degree methods. The two mechanical induction invented by Wankel are specified, and the other are those which we have elaborated beforehand. In 7, we find Wankel's method by mono induction, in 8 the method by poly induction in double part, in 9, the method by semi transmission, in 10, the method by hoop gear, in 11, the method by internal layered gears, in 12, Wankel's method by intermediate gears, in 13, the method by internal juxtaposed gears, in 14, the method by intermediate internal gear, in 15 the method by simple directional gear, in 16, the method by heel gear, in 17, the method by dynamic central gear, in 18, the method by gear-like structure.

These methods have all been commented on previously. We bring them up here because they enter in composition with other methods to support the compressive parts of machines disclosed in the current exposition. As we mentioned at several times in the

disclosure, the ratios of these mechanical inductions will have to be produced in accordance with the Geometric figure, or with the Sequence of realization of the geometric figure, or if the same ratios are conserved, these inductions will have to be realized in a semi transmittive way, with the dynamic support gear which will at this time, dynamically modify the original ratios.

Figure 3 a) shows the main methods of increasing the mechanical degree which we have previously elaborated, principally in PCT CA "002, 001615 , US 10/514,403 . These are the methods by layered combinations of central and peripheral mechanical inductions, 19, the method by polycammed gears, 20, the method by geometric addition 21, the method by semi transmittive poly induction 22, the method by poly crankpins 23.

Figure 3 b) of the same figure, we simply bring up the fact that these methods generally have as result to modify the acceleration /deceleration dynamics of the piston, for example by modifying the center course of the piston 24, increase the coupling and an improvement of the curve of the machine figures 25, in relation to standard curves.

Figure 3 c) illustrate that we bring up the generalizations of sizes which we have produced for paddle structure machines, being Polyturbines.

By these methods of degree increasing by modification of paddle course, we have shown that we could increase the compression of retro rotary machines and the coupling of post rotary machines. We have also shown that we could realize retro rotary machines of various degrees, these machines, for example, poly turbines, realize new cylinder forms which are more subtle and which are supported by an increase in the number of inductions. We have shown that we can produce, with the means of polycammed gears, accelerative / décélérative actions of the compressive parts, increasing their oscillatory effect, and thus increasing the course of its compressive parts and the forms of the relative cylinders. We have shown the mechanical layering combination rules. We have generalized the cylinder forms of poly turbines. We have shown the effects of poly crankpins on rotary machines. We have shown that the machines could be constructed by groups of unitary paddles, standard poly faced paddles, paddle structures. We have shown the perfectly bi rotary dynamics of clockwise paddle movement, and the rotativo-circular dynamics which this movement implies.

Figure 4 demonstrates, from our previous work, some sketch of cooperative dynamical paddle and cylinder

Figure 4 a) shows that we were thinking that the movement of the paddle , to be associate with the rotational movement of the cylinder dad to be alternative and rectilinear , what is like we see , not realizable.

Figure 4 b) shows that we were thinking to that center movement of the paddle had to describe a geometrical a geometrical form. This never realize an only two degres of liberty machine, and we dint submit any dynamical figure for the sketch .

Figure 5.1 shows, more particularly the mechanical support by polycammed gears, 43, 44, witch is permitting to realize a superior degree of liberty in standard kinetic of rotary engine. Like we will see lather, it will be possible to realize Turbinary machines with the polycammed gears.

Figure 5.2 shows the semi transmission that we realized to realize a dynamic central support gear of standard rotary machine. As we will see, these techniques will be utilized in Turbinary engines to motivate the cylinder , witch will be separately, or in the mean time , be activate with the support gear.

Figure 6 a) shows the push in engines before Wankel. We note that these machines are efficient, from the point of view of the push, firstly, since their explosion is realized *at the height of the ascent of the crankshaft and of the straightening of the paddle, 25.* Secondly, we notice that the descending push on the paddle 26 is done by its connection to the cylinder, this connection allowing a so called lever effect 27. In addition, let's repeat that this has been the cause of the premature wear of the segments, and this is why Wankel has realized two paddle support methods making its segmentation possible.

Figure 6 b) shows Wankel's two inductions, the mono induction 28 and the induction by intermediate gear 29 . We'll explain more thoroughly, during the current disclosure, the fundamental gaps having participated to the mechanical deficiencies of these inductions. These two figure prove that Wankel, by these two mechanical support, displaces the anchoring of the machine from the exterior. This the most fundamental gap of Wankel engine. Each of these mechanical support produces a high proportion of counter pushes which are harmful to the machine motor capacity. In the method by mono induction, whereas the explosive push on the front of the paddle realizes a motor 29, the push on the back part of the paddle produces a counter force 30, reducing the machine motor capacity of the machine. Because the method of mono induction is most advantaging the front of the paddle effort, it has been choice by the industry In the mechanic by contrary intermediate gear, the push in the direction of the rotation is realized by the back part of the paddle 31, and the negative push is produced on the front part 32. As we can see, the connecting rod effect has been subtracted in Wankel's versions of rotary machine. The present invention intend to show , in its most basic realization, that it is possible to realize a machine of simplest degree of liberty, that is realizing an equal push of the explosion on all the surface of the paddle , what will subtract the Wankel gaps.

Figure 7.1 shows two types of observations leading to the realization of specific inductions.

Figure 7.1 a) shows a the first type of observation, in a) which name *exterior comparative,* the observer, positioned on the outside of the machine 49, is in measure to state that what defines post rotary machines is that in them, the paddle travels in the same direction of the crankshaft, but at reduced speed 50, whereas what defines a retro rotary machine consists in that the paddle travels in counter direction of the crankshaft 51. Its from this type of observation that can construct the method by mono induction.

Figure 7.1 b) show an *the observation by the* crankshaft. In this type of observation, the observation can be produced from an observer, this time positioned on the machine's eccentric 52, we'll state that, whether the machine be post or retro rotary, the paddle always has a retro rotary action in relation to that of the crankshaft 53, and that what differentiates machines, from this point of view, is a difference in degrees, in what that the retro rotation of the machine is more accentuated 54. But, from this point of view, the paddle is always realizing a retro rotation , around its crankpin, or its eccentric.

Its this type of observation which could be realized all methods in which the induction of the paddle is realized in view of realizing a retro induction in relation to that of the crankshaft.

Figure 7.2 a) shows the method of *specific exterior* observation witch consists in observing, by an outside observer 55, the movement of several specific points of the paddle in course of planetary motion. We have called the figure that is obtained by this kind of observation that Figure of displacement points. We will see that in some cases, that when the geometric figure is realized by steps, that this figure is similar to the geometric figure, and other cases, when the geometric figure is realized successively, and simultaneously, the number of its sides is more than the opposite figure, is totally different. This type of observation is the comprehension base of the poly induction method. In a), we notice that all point located on a line leaving the center of the paddle at one of its extremities 56, realizes a course similar to that of the paddle, and slightly more obtuse 57.

Figure 7.2 b) shows that in addition, if the chosen point is located on the line from the center, connecting it to the center of one of its sides 58, the realized course will be similar to the first, but in opposite direction of it 59.

Figure 7.2 c) shows in addition, that if the chosen point is located in an area intermediate to these two lines, being posterior 60, or anterior 61, the forms realized by these points will also be similar to the first, but this time in an oblique ly half way between the first, being posterior 62, or anterior 63.

Figure 7.2 d) shows that during these observations, we'll state in addition a constant between the realizations of these curves, in lack of their specific, totally different orientations. If we trace a line between the lowest point of one of the figures, in y and the highest point of the other figure x, and we follow the unfolding of these figures, we'll state that the displacement of these points forming a line will be equidistant. All throughout the realization of the complementary figures.

Figure7.2 e) shows that we could then realize, such as shown in e), a double parted poly induction, in which secondary crankshafts 64, will be set up in a rotary manner on a master crankshaft 65,their crankpins being initially set up in such a way as to realize complementary forms. These subsidiary crankshafts will support the compressive parts. We'll find more details of these statements in our American patent number USA 694 313 b2 , China zl01808601.2 Russia 003820 and title Energy poly inductive engine

We can thus deduce that any point of a paddle which is observed by an exterior observer is realizing a specific form, which is named Figure Geometric in relation to the bloc. In fact, it means that if we would fix a pencil on that point, the point would ,during the kinetic motion of the paddle, draw it's geometric form on the bloc.

Figure 8 presents, in a), that the comprehension of the geometric dynamic of the paddle realized by the poly induction is totally opposite to that of the previous art. In fact, (, we see that we can express the geometric dynamic of the previous art, by saying that the form d of the desired cylinder is realized from a rapid, circular, geometric movement 66, realized by the central eccentric, and by the peripheral realization, of a circular retro rotary movement 67, realized by the paddle. The final form is thus subtractive, since the superior movement is negative, and cuts back the speed to the central movement. It is the case here of Wankel and his predecessors' first fundamental gap.

In the poly induction, the dynamic realization of the projected form 69 is, in contrary, produced by a slow center movement 70, and from a rapid, accelerated peripheral movement 71. The form is thus created from the addition of these two positive movements, this being from where the machine gets its power.

Figure 8 b) shows that, whatever the position of the centers of the subsidiary crankshafts during their total elevation, the explosive push on the paddle remains, in lack of the double parted poly induction, always equally distributed. In fact, when the line constituted by the two crankshafts is perpendicular to the explosion 72, the paddle is equally divided 73. In the same way, when the crankshafts are angularly set up 74, the paddle is once again equally divided, since the anterior and posterior parts are equal 75, and that the central part is well centered 76.

Figure 9 shows by which observation we can state the translational movement of the paddle, and the complementary rotational movement of rotation of the cylinder that will form the kinetic of the basic Turbinary engine. We have named this observation, *observation from the master crankshaft* of poly inductive machines. This type of observation was obviously not possible for the inventors of the previous art.

Figure 9 a) shows that we can suppose an observer set up on the master crankshaft 113 of a poly induction machine. This crankshaft, as for its stability framework, will be able to state what follows.

In figure 9 b) we show exactly what the observer will see, as paddle and cylinder movement. Firstly, they will observe the Translational movement of the paddles which it observes, and that each part of it realizes a strictly circular movement, and non rotary 114. Secondly, when they will observe the cylinder, it will not be for him, as for a fixed exterior observer, but rather in a rotational movement, and read specifically in inverse movement of the paddle's movement 115.

Figure 9 c) shows a more practical way to obtain these result. We can once again realize, mechanically and constructively, the association of translational and rotational movements which constitute the most basic Turbinary movement by clutching in a vice 800 the master crankshaft 801 of a poly inductive machine by activating the rest of the machine. Consequentially, in fact, if we make the whole rotate, we'll state that the subsidiary crankshafts 802 can still be activated and consequentially produce the clockwise movement of the paddle 116, and that the support gear, non-dynamic beforehand, will activate itself, leading with it the rotation of the cylinder 117. We could then by this stratagem observe from the outside a perfectly rotativo-circular machine with a clockwise paddle type.

Figure 10 a) is dynamical illustration of the different position of the paddle and cylinder the translational dynamic saw in figure . Paddle and cylinder have been include in a bloc of the machine. Like we can see, during the translational movement of the paddle 110, the cylinder is realizing a strictly retro rotational movement 112. Like we will explain in figure 16, this figure have bean obtained of an observation of the paddle by an observatory that was positioned on the master crankshaft of a paddle motivated by a mechanical induction of the kind of poly induction. Figure shows what will be the principal and idiomatic kinetic of the present invention. In the present invention, we prove that the division of movement that has been made in poly induction, and that was staying at this time distributed in the master and subsidiary crankshaft, may be distributed to the paddle and the cylinder. The result of this action will be that the translational moment of the paddle will be strictly completed by a rotational movement of the cylinder, and if the machine is of a post rotativo type, that cylinder will rotate in a reverse direction than the translational direction 112 . It has to be noted that in the drawings, a translational movement will be represented by the double or triple arrow 111.

As we will see, this complementary action will be possible for all paddle and cylinder forms of the art. But here, the machine is realized with a post rotary figuration with a three sided paddle, and a two sided cylinder. In this dynamic we suppose a very specific paddle movement, so that it's aspect remains unchanged, observed from the exterior, during its center's rotation, and that consequentially, as for the hands on a clock, in spite of the movement of the hands, the orientation of the numbers do not change. This is why we have named it translational movement.

In a machine, if we realize a paddle with this type of movement, we'll need to realize the cylinder in a rotary manner 112, and in the most specific case of post rotary machines, in a contrary direction of the circular movement of the paddle's center.

Figure 10 b) is showing the translational movement, described by arrows in figure 10 a)

Figure 11 a) shows, by deduction of the previous experience, the base mechanic serving to realize concretely the support of the machine in clockwise movement. It is the case of a poly induction, so to speak, dynamically inversed. This part of the figure, the components are showed in an angular tri dimensional cut. We install simply in a rotary manner two subsidiary crankshafts 118 provided with confounded support and induction

gears 119 in the side of the bloc machine 806. This bloc will receive the compressive part in its interior. We install the paddle 119 on these crankshaft's crankpins. We then set up in a rotary manner in the machine a machine axe 120 to which we'll fix a link reuniting the crankshaft's gear 121 and the cylinder 122. The translational paddle movement will thus lead a retro rotation of the central gear and, consequentially, the cylinder. As we can see, the post rotation of the sub crankshafts 807 will produce the retro rotation of the coupling gear fixed on the axle of the cylinder, and the cylinder will also turn in a retro rotational direction 808 . Because the subdivision of the inner timing of the elements stays the same as in the poly induction engine, the gear ratios will not change. This will allow the cylinder to realize a motion which has half the speed of the subsidiary crankshafts. It is also interesting to note than an observation of the whole system by an observer that would be disposed on the cylinder will permit to see exactly the standard motion, which proves the perfect coherence of the systems. For this reason, it is also important to note that the level of the invention must stay at an exactly standard level, and for that reason, that the curvature of the cylinder is staying exactly the same as in standard rotary engines.

Figure 11 b) is presenting the same elements than as a , but in a cross-section view. One can see that the shaft of the cylinder 120 is passing through the piston 119 and the block of the engine 806 . This means that the motor axle of the machine will be of this arrangement, and we can see that this axle has no eccentric and no crankpin. Each turn of this axle will be coordinated with the translation movement of the paddle, and the arrangement will produce six compressions by turn. This means that, for example in a four cycle engine, this arrangement will produce three explosions by turn, which is three time superior than the strand motion, for there is three time less space et components.

Figure 12 a) is showing the top position of elements in a poly induction mechanical support method. This will prove that basic elementary Turbinary dynamic is archived on the same division of time of poly induction.

Figure 17.2 b) is showing the position of the elements at the next compression of a poly induction standard dynamic. We can see that when subsidiary crankshaft turns 120 degrees, the master crankshaft has turned 60 degrees , and that the double turning of the crankshaft supporting the paddle forces the paddle to exactly produce the standard cylinder.

Figure 17.2 c) is showing that the relationships are respected in Translational Turbinary engines, but are distributed differently, so that the work of the master crankshaft, is done by the cylinder. The subsidiary crankshaft continues to turn, like before, by 120 degrees, and during this time, the cylinder is turning at half of that, so here, 60 degrees. So the cylinder is turning in counter direction, at exactly the same speed and ratio that the master crank shaft of the poly induction.

Figure 13 summarize the enormous difference of that dynamic in relation with the standard one , and how the Turbinary dynamic is working out the kinks of Wankel engines.

Figure 23 a) summarized reminds us of the mechanical difficulties and weaknesses of standard rotary machines, consequential to the pre-enounced gaps and shows that all these difficulties and gaps are overcome in the Translational/Rotational setup. The theoretical gaps mentioned above result in fact in very real difficulties in which the main are the following:

A negative counter force on the back part of the paddle in course of descent 123

a) An unequal speed of systemic deconstruction 124
b) An over commanding of the crankshaft, a third of paddle rotation, requiring a whole rotation 125
c) An increased de-rotation friction of the paddle on its crankshaft 126, caused by the use of an eccentric

In summary, thus, the paddle doesn't work positively on but a part of its length, and this work remains unequally distributed. In addition, this work realizes a work in which the resulting force is reduced by the speed of the crankshaft and the great friction. The machine is very ineffective. In clockwise paddle/rotary cylinder dynamics, all these gaps are cut back and replaced by qualities.

Figure 13 b) shows the principal qualities of the basic Turbinary kinetic. Let us note:

A power on the whole length of the paddle 127
a) A decreasing descent speed equal in all points 128
b) A notable decreasing of the over commanding of the crankshaft: a number of three explosions per rotation of the crankshaft in opposition to two 129
c) A rod effect recovered by the Turbinary push on the cylinder 130
d) A systemic contrary direction of deconstruction between the cylinder and the paddle 131
e) The absence of all acceleration and deceleration of any piece 132
f) The rotary cylinder could be provided with a paddle and assures cooling and realizes dynamic light valves for the machine

Figure 14 shows that the Translational dynamic is located halfway between standard piston, rotary, orbital and turbine and with rotor cylinder dynamics. This is why we have named these machines Turbinary machines or finally *rotativo orbital, or simply Turbinary machines or Turbinary engines.*

Firstly, let us note that Turbinary machine with translational paddle machines have a frank and equal push on the paddle, not only similar, but equal to that of piston engines 133. Then, we must say that these machines take their geometric figuration from rotary machines of the previous art 134. It means that like we will see later, it will be possible to build the machine with several numbers of paddle and cylinder sides , but also , construct

theses machine with material figures of post rotary, retro rotary and bi rotary natures. It finally means that it will also be possible to reverse the distribution of the translational and rotation movement between the paddle and the cylinder. It also means, like we said in the disclosure, that all complementary elements, like spark plug, valves, carburetor, distributor may stay the same as in standard engines, but simply respecting the new number of explosions. We must then add that these machines, unless we produce them intentionally with polycammed gears, have, like turbines, no acceleration or deceleration of the mechanical or compressive pieces 136. Then, as in contrary motion rotor cylinder piston machines, the combination of inductions has been done with the crankshaft set up horizontally, which implies that the crankshaft has not been placed in periphery, but centrally but also that the parts are in contrary direction 137. Finally, the descent of the piston is vertical enough and in periphery, and reminds us of that of single paddled orbital engines 138.

It is almost true to say that this new machine possesses the qualities of all these machines reunited without possessing their respective faults.

Figure 15 shows that all first degree induction obtained by observation on the crankshaft, if it is realized in a one to one support gear to induction gear ratio, can result in the Translational guidance of the paddle by the center. It means that the paddle doesn't necessarily have to be supported by a group of synchronized sub crankshaft, but may also be supported by central crankshaft means.

Figure 15 a1, a2, a3, we find respectively first degree inductions by intermediate gear, by hoop gear, by heel gear, all set up with one to one gear ratios. This gear ratio shows well, in addition of the perfectly equal action on each part of the paddle, the bi rotary aspect of clockwise paddle machines, aspect which we find, under other figurative forms, but in poly turbines and in rectilinear rod engines.

Figure 15 b, shows that the mono inductions or inductions by poly inductions must, as all induction in which we wouldn't have changed the gear ratio, be realized by a semi transmission means 139 As we showed in our earlier works, the semi transmission will activate the support gear of the induction. In this work, we wanted to modify the ratios of the gears.

Figure 15 c shows that in the semi transmission will deep the standard ratio of gears, and will modify the retro rotation ratio of the paddle on its crankpin, to the ratio that will be convenient, here being a one to one ratio.

So in all these examples, the movement of the paddle will stay translational. 110

Figure 16 a) differentiates ascending and descending inductions. The ascending inductions are of standard first degree, or even such as we have seen in the layering of inductions, the peripheral induction, allowing to assure the support of the paddle. As we can state here, in 140, we have an ascending induction of mono inductive type. A descending induction is realized when a peripheral element is activating an inferior or

central element. In these cases, it's the superior support gear, usually the paddle's, which becomes the induction support gear 141, whereas the inferior gear, more often of the central axe is the induction gear 142 of this axe and the elements, usually the cylinder which are attached to it. In the current figure, in the goal to simplify, the descending induction is also a mono induction, but this could be a poly induction, an induction by hoop gear or any other induction.

Figure 16 b summarizes the two main types of semi transmission, , by internal gear 143 , and by conical gear 145 (and in b 2 shows how to realize them confoundedly.

We can realize the acceleration or the deceleration of parts by semi transmission realized with the aid of an internal and external gear 143, or even by the coupling of two gears to a double gear 144 of different sizes. In addition, we can realize the inversion either by pinion gears 145, or either by combination of external gears 146.

Figure 16 c) shows that as these two mechanical actions will frequently be necessary in rotativo-circular machines, we'll have interest to realize these semi transmissions that simultaneously reverse and accelerate the movement of one of the parts, in a confounded manner, such as in b

Figure 17 summarizes the three main methods of support for rotativo circular machines. We can consider that Turbinary machines are the horizontal expression of layered support machines, already presented by ourselves. *Consequentially, we'll always need, to realize them, two combined inductions, which very often are of semi transmittive type. We therefore define semi transmissions as inductions transferred onto themselves,* from center to center. One will have understood, given the number of first degree inductions which we have furnished, and the number of semi transmittive inductions, which the possible permutations are vast and can't be presented here. This is why we'll give the generative combination rules of these inductions.

The logic of these rules is the following. One understands that one of these inductions will control the rotation of the cylinder and the other the clockwise or planetary movement of the paddle, and that consequentially these two inductions must be perfectly synchronized. They must therefore communicate by a third element, allowing the coordination.

Figure 17 a) is showing ascending 1000, a descending 1001, or semi transmission support methods could therefore be realized by a common part, either by the paddle, the crankshaft, the support gear. In part a) of the current figure, we find an example of the first type of combination. By one side, the paddle is supported by an ascending 1000 method by subsidiary crankshaft, of the ratio of one to one, assuring the translational movement. In addition, on its second face, it is provided with a descending 1001 induction assuring the rotation of the cylinder axe. The two systems are therefore combined by the paddle 119 . We will say, in this case, that the mechanical induction of the compressive parts are synchronized by the common element which is the paddle.

Figure 17 b) shows that the induction of the paddle is realized by an intermediate gear induction 1003 . It communicates with the crankshaft and, in addition, from this same element, we attach a semi transmission 139 which will activate the cylinder in a rotary motion . Paddle and cylinder will therefore be converging because they are coupled to this same element which is the crankshaft. We will say, in this case, that the mechanical induction of the compressive parts are synchronized by the common element which is the crankshaft.

Figure 17 c) shows the elements will now be connected by a same gear, which will serve as dynamic support gear to the paddle and induction gear or axe to the cylinder. In fact, we can see that the paddle is activated by a semi transmittive mechanic,139 and that its support gear is dynamic. In addition, if we realize the retro rotation of the cylinder, from the crankshaft, we can use an inversed semi transmission, realized totally confounded with the first, which allows us to say that the cylinder gear 1004 is an induction cylinder, is the same gear as the dynamic paddle gear. The two mechanical inductions of cylinder and paddle will be coordinated by having the same gear , which is for the paddle, its dynamical support gear, and for the cylinder, its induction gear. We will say, in that case, that the mechanical inductions of the compressive parts are synchronized by the common element which is the support gear.

We now understand better the interest of the poly induction set up presented in our first assembly figures. In this realization, the ascending paddle induction is exactly the same, in opposite direction of the semi transmittive induction and inverses the cylinder, which limits strongly the number of parts. We'll find, at the very end of the current exposition, other combination examples which all respect the same associate fund ideas, knowing that the inductive parts are necessarily connected by one or another of the mechanical parts of the machine, paddle, crankshaft, or support gear.

Figure 18 shows that translational paddle movement machines are realizable, like we said in our disclosure, for all machine figures of the rotary art . In addition, it specifies the contrary and same direction movements for translational movement/rotary cylinder machines, both retro and post rotary.

Figure 18 a) is showing a post rotary machine figuration, with a three sided paddle and two sided cylinder. We can see in this figure that here, the cylinder is driven in a reverse way than the paddle

Figure 18 b is proving that Turbinary motion may be applied to retro rotativo figures of rotary art machines. For example, here, a (the)triangular retro rotary machine. We note that in the case of the retro rotary machines, the cylinder remains completely rotary, *but, like it is showed by the direction of the arrows, works in the same direction as the Translational paddle movement.*

Figure 18 c) is proving that all post rotary figures may be moved in a Turbinary translational kinetic. In fact, the figure shows a clockwise paddle movement of four

sides and a three sided contrary rotary cylinder. It must be noted that, in reason of the post rotary type of the machine, in a strictly translational movement of the paddle, the cylinder movement will be, as demonstrated by the arrows, in a contrary motion.

Figure 18 d) shows a Turbinary machine of a retro rotary type, with a number of sides different that in our example presented in b). Here, the three sided translational paddle movement machine, is moved , as we can see, in a four sided cylinder, and consequentially, of retro rotary figuration. *Cylinder and paddle therefore working in the same direction.*

Figure 18 e) shows a five sided translational paddle movement post rotary, and a cylinder in contrary direction movement, of four sides, what is meaning that the type of the machine is a post rotary one. As we can observe, like in a and c, the translational movement and rotational one are realized in a reverse direction.

Figure 18 f) shows in a retro rotary figure of a Turbinary translational machine with movements in the same direction, with here a (clockwise,) translational four sided paddle, and five sided rotational cylinder.

Figure 19 specifies that even bi rotary type machines, as for example Polyturbines and Quasiturbines,

Figure 19 a) is showing the simplest way toe realize , in a Turbinary kinetic , the Polyturbine (Wilson 1975 , Beaudoin 2001) compressive element. In fact, these are realizable in a similar manner as a Turbinary machine. A we can see, here, during the rotation of the cylinder, the opposite extremity of the structure paddle are realizing an alternative opposite rectilinear movement 1110 .

Figure 19 b) shows that the mechanical induction of the paddle structure may be the same as the one utilized in our earlier works, but with the ratios of Turbinary engines. In addition, if we observe the sequences present in a and b, we'll note that, as for standard machines, various rotary motion levels can intervene for a same machine. In a), the paddle structure isn't rotary, it simply realizes its square aspect alternatively, and is completed by the rotation of the cylinder. We'll also note that the two crankshafts supporting the paddle structure are strictly rotary, which forces the realization of the alternative rhombuso-squaroid passage of the paddle structure to realize itself across a certain rotation, however, non-planetary. This rotation is completed by the rotation of the cylinder.

Figure 19 c) shows that structure witch contains paddles attached on the main paddle structure can also be realized in a Turbinary way. Figure shows, like for the standard figures of machine, that the Turbinary motions of the Poly turbine is also realizable for other numbers of side. Here the figure shows a six member paddle structure in which each coupling point is rectilinearly moving in synchronization with a rotational cylinder.

Figure 20 a) shows that the Turbinary machine can also, from already commented correction mechanics, notably be realized by the use of polycammed gears, for standard machines, be realized by successive accelerative and décélérative movements .

Figure 20 b) shows that, in these cases, the curves of the cylinders will be modified 1112 , caused by the variable accelerative and décélérative speed of the cylinder.

Figure 21 shows some that rotativo circular machines can be realized with different types of paddles, and some other motions possible in Turbinary machines.

Figure 21 a) is showing, for an easier comparison, we call back standard paddle figures, in the basic Turbinary motion.

Figure 25 b is showing the compressive structure is constituted of unitary paddles with translational movement 111 acting in combination with the rotational cylinder 112 to create compressions between them and the exterior, or even between them and the cylinder in the center of the machine. In the later case, the compression realized by this group will be the double of the normal compressions and the machine could consequentially establish a diesel gas management. Like we can see, if we compare the top displacement of each single paddle to the top displacement of the multi faced paddle, we will see that it is the same.

Figure 22 shows that that the polycamation of the induction or support gears can be realized not to accelerate and decelerate the positional movement of the paddle, but to modify alternatively the movement of the paddle 1020 , making it thus oscillatory clockwise. This is possible by a relation of support and induction gears all in a ratio of one to one but this time, of polycammed nature.

In addition, in this figure, we show that we can by groups of unitary paddles realize the compression of cylinder machines with an odd number of sides. Here, when one of the paddles is in compression, the other will be in depression. We'll also notice the contrary oscillatory action of the paddles.

Figure 23 shows that as for standard machines, we can realize the machine with an inversion of the dynamic of the compressive parts in center and periphery.

Figure 23 a) shows that it will be the cylinder in translational movement 111 and the paddle in rotary movement.112 It is to be noted that, as we will show more abundantly at the end of the current invention, the orientation of the parts will be complementary and that the mechanic will be that of the material counter part. Figure shows also a second consequence of this inversion will consists in what that the post rotary figures thus produced, in addition of, requiring retro rotary mechanics, will realize dynamics in the same direction

Figure 23 b) shows that translational cylinder / rotational paddle is also applicable to retro rotary Material figure, and that , in this case, whereas retro rotary figures, the kinetic will realize contrary direction dynamics.

Figure 24 that even inversely, the cylinder can, like the paddle.

Figure 24 a) shows a single multi faced piece may turn in a many single faced translational pieces

Figure 24 b) shows a single multi faced piece may turn in an external paddle structure in

Figure 2 shows that we can go even further by varying the dynamics in such a way as to realize explosions and expansions in different locations of the two previous figures.

Figure 25 a), shows a standard two-sided paddle dynamic, and a cylinder with one. Figure shows other examples, this time with a three sided paddle and a two sided cylinder, from the rule which we'll name, *rational counterpart rule.*

Figure 25 b) shows that the paddle and cylinder of this machine are dynamically cooperating, but however doesn't realize a translational movement. Here the explosion takes place in three different locations b1, b2, b3 and not at a single one, as in the standard dynamic.

Figure 25 c), we suppose, for the comparison, a translational movement

Figure 26 shows what we'll call the rule of cylindrical counter-part. This rule shows how all the different appearance mechanics are comprehensible from a same logic. This rule can be enounced in the following way: for all machine of a given number of sides, there exists, during its standard realization with planetary paddle and fixed cylinder, a number of degrees of rotation of the eccentric for each area of the new expansion. All alteration in diminishing of this number of degrees will have to be compensated in counter part by a rotation or retro rotation of the cylinder. In other terms, the cylinder will itself have to be found, in relation to the paddle, in a position identical to that which it would have had without these alterations.

This rule may be exposed to, by the relationship of retro rotation of a paddle on itself during the rotation of the eccentric. In a general rule, when the eccentric of a standard motion of a post rotary machine has turn a complete turn, the internal gear , coupled to the support gear has retarded the oriental rotation of the paddle of a ration equivalent to un one the number of sides of the paddle. In other words, the paddle as realized a retro rotation of itself on its crank pin equal to the ratio of the number of sides of the cylinder on the number of sides of the piston. For example, the retro rotation of the paddle of an triangular post rotary paddle of 240 degrees. In the basic translational paddle movement, we have said that we modify this relation ship of retro rotation, because we said that the ratio of the gearing had to be of one to one. It means that in the translational kinetic, the

retro rotation of the paddle on itself have been augmented of 120 degrees , passing of 240 degrees to 360 degrees. It is why, like we see in the part a of the figure the cylinder can stay fix and a compensative movement has to be applied , so a retro rotation exactly equal to the modification of the retro rotation on hits crank pin of the paddle., here 120 degrees.

Let us give an example. We know that the explosion in a standard three sided paddle and two sided cylinder machine will happen after one hundred and eighty degrees of crankshaft rotation. Thus, if we determine that the next explosion will occur at one hundred and twenty degrees only, we'll need to calculate the difference of the angles corresponding to the standard explosion and that of the new projected explosion. We arrive here at sixty degrees less. We'll therefore have to effectuate a mechanical regularization and imprint to the cylinder a retro rotation of sixty degrees. If we thus realize the continuation of the explosion, we arrive to the clockwise movement.

Figure 26 b shows that it is possible to realize the cooperation of paddle and cylinder in a displacement of the same direction.

Figure 26 shows that this counter part rule is general, and is applicable no matter what the location of the new projected explosion.

Figure 26 a) shows, for example, that the location of the new projected explosion is at one hundred degrees, being eighty degrees less than the standard location. The mechanical regularization will therefore be to imprint to the cylinder a retro rotation of eighty degrees. Figure is also giving to example of the kinetic complicity of paddle and cylinder , that which we can understand as being the rule of the cylindrical counter part. This counter part rule is a generalization, and is applicable no matter the location of the new projected explosion.

Figure 33 b) shows an example in which paddle and cylinder are moving in the same positive way. The retro rotation of the paddle, at its next top point in relation to its eccentric is inferior to the standard of 90 degrees. The cylinder will have to rotate 90 degrees the compensate for this difference. In figure, the next top point of the paddle in relation to its crankpin or eccentric occurs after a rear movement of 110 degrees, so 70 degrees less than the 180 that are necessary to realize the standard motion. So the cylinder will have to be placed in a retro rotation of 70 degrees.

Figure 27 is giving a second example of cooperation of compressive parts , when the paddle is non Translational. This example utilize a double sided paddle an one sided cylinder.

Figure 27 a) is showing the standard kinetic.

Figure 27 b) is showing a displacement of the two compressive part, in a positive direction.

Figure 27 c) is showing a displacement of the two compressive part, in a negative direction. In is absolutely important to note that it is possible to realize a dynamical cooperation between paddle and cylinder, and that this is not assuring that the machine will have good cycle, when realized as engine, pump, and compressor. In fact, for a complete working machine, possessing definite and determinate cycles, wie will need to precise an additional component, named the Geometric figure.

It is absolutely necessary to infer the following ideas from the last example. These are the following; first, for any modified ratio of rotation of the eccentric for a retro rotation of one side of its faces, the piston will rotate the difference, and the second part will stay dynamically concordant.

But, as seen in these examples, in a), the number of top position is small, and will always occur at the same place. In b and c the number of cycles of the cylinder before return to its initial position is high. In some cases of decimal difference, it may never come back to its initial potion. This is why, we also need to regulate the complicit of movement of one of the compressive parts, not only with the other, but also with the , exterior, or in other words, with the bloc of the machine.

It has to be to understood about these rules and figures that for any degree that we will modify the retro rotation of the paddle on its crankpin during the complete rotation of its eccentric, and this only if the ratio of turning of the cylinder will be equal to this modification, the dynamic coupling of these parts will be preserved. But it is extremely important to understand as well, that this will not assure that the evolution of this internal system will be conform to the exterior necessities of the machine, which is absolutely necessary to produce this machine as engine, compressor, or pump. The kinetic of paddle and cylinder can stay in an indefinite relation to the bloc of the machine. For example, if the modified ratio of retro rotation of the paddle on itself is of an infinite amount, like for example of 10.33333.... degrees, the paddle cylinder will never pass at the same place of the bloc, so it will be impossible to realize a good positioning of the accessories like the valves, and to determine the correct working cycles of the sparkplug.

It why the control of the complicity of the paddle and cylinder has to be realized , not only between the elements, but also simultaneously , in relation to the exterior , in relation to the bloc of the machine.

Figure 28 gives a first example of a more complete dynamic allowing to make appear these figures which we'll name, by opposition to material figures, the Geometric virtual figures.

Figure 28 shows, in the art, the two unique possibilities of moving a paddle of two sides in a cylinder. On one side, this paddle, when the machine is a post rotativo machine, the paddle is running in a one sided cylinder. In another way, if the machine is a retro rotativo machine, the same paddle will move in a triangular cylinder. We will name the first one the Material figure, this figure being composed of the material element of the engine. We will name the second one the Geometric figure. This is the figure that

specifies and rigorously determines the geometric relationship of the components with the bloc

Figure 28 b is showing that it is, in a certain way, possible to realize simultaneously the machine, if the cylinder is active. In fact , it is possible , like we can see to activate the piston as if it would move in a triangular cylinder, but it is also possible to activate the cylinder , and if the cylinder has only one side, they realize , by its dynamic realization, three compressions by turn , like if we would realize a triangular engine. This means that we will realize the number of compressions of a triangular cylinder engine but at the same time, we will benefit from a big cylinder compression, which we have in retro rotativo engines

As we have shown in the previous figures, it is possible to realize the location of the new compression at any new angle and to correct it by a cylindrical regularization. However, since it is motor machines we are speaking of, it is important to specify for these new machines, the types of mechanics which will be used to support the paddles and cylinders, as well as the locations of the gas intake and exhaust, as well as the fixation of the spark plugs or other accessories. To do this, it is therefore pertinent to proceed to an observation of the paddle behavior, independently from the cylinder.

This being done, we'll state that the attribution of a new explosion location will necessarily force a different dynamic paddle figuration, different from its material figuration. This new figuration, for the reasons which we have previously given could be established in such a way to be realized in one, two or three turns.

We'll thus state that by determining the location of the next explosion in such a way so that the new projected angle can be a simple fraction of three hundred and sixty degrees, for example, of one to three, one to four, one to five, six, we'll allow the paddle to realize a virtual figure equivalent to one of the base figures of retro rotary machines.

In the example given here, we project an explosion at each one hundred and twenty degrees. And we realize the paddle consequentially in such a way so that it realizes this virtual figure, here triangular, all while realizing the dynamic regularization of the cylinder.

We must necessarily distinguish *Material* figures from Geometric Figures. In this example, as we have said, the material paddle and cylinder, realize a post rotary type figure with a two sided paddle, and one sided cylinder, such as shown in a. In b, we see that the Geometrical Figure that the paddle will realize is that of a triangular engine, exactly by the same mechanic as this retro rotary figure in fact, the paddle will displace itself identically.

To compensate this planetary paddle rotation figure, we'll activate the material cylinder by adjusting each angle and to each moment according to the procedure stated in the previous figure. The cylinder will therefore turn of two third rotations for each third of paddle rotation. This procedure thus allows to realize the machine with a retro rotary

mechanic, and simultaneously with a real post rotary figuration, in which the compression will be better.

As we can notice, paddle and cylinder both turn in the same direction, which makes the simply differential machine, posterior.

We can resume an saw that the geometrical figure is the geometrical figure that is obtained by assembling the top compression points. Like we can see in that example, the simplest realization of the geometrical figure occurs when the paddle is realizing the counter type figure of retro rotary machine. For example, her, we know that it would be possible to run the double sided paddle in a fixed retro rotary triangular cylinder. And we demonstrate that it is always possible to determinate, for a compressive parts ensemble, the complementary position. So we can see that we can either determinate the relationship of the paddle to the other compressive part, and to the bloc, like if it would be a fixed cylinder. With that process, we will assure not only to exactly know the cycle of the machine, but also, witch mechanical induction , and ratio to use, and were to fix subsidiaries elements. In that example, we note that the figure of displacement of one point of the paddle during its cycle, this point being observed, like we explained in the disclosure, by an exterior observer of this point is the same that the Geometrical figure , and the same of the Sequential realization of Geometrical figure. Materially, these figures would also be the figure that a point would paint on the bloc if it would be provided of, for example a pencil, or a brush. In the first case, the real figure is of post rotary type with a two sided paddle, the group turning and realizing a virtual retro rotary figure with triangular cylinder. These figures are extremely important because they describe the relationship between the paddle and the bloc, and allow the determination of the ratios and the mechanical induction that will be necessary to control the paddle. But, like we explained, the point to be observed can be varied, and it can also be the top of the paddle. The figure of Geometric figure of displacement of this point will permit to determine the peaks of compression and expansion and to situate the holes of valves in the bloc , to coincide with the holes of the cylinder.

In a general manner, we can say that the geometric figure is the figure of the movement of the paddle, the figure of the cylinder that the paddle would have had if the cylinder has would not have been dynamically motivated.

Figure 29 gives a second example of the Material and Geometric figure of the counter type of cylinder form.We must realize the machine with a specification of the Geometric figure, wince, as we'll see, on one part, the mechanic will be that of the Geometric figure, and on another part, the position of the spark plugs, intakes and exhausts of the machine will also be realized by respecting the Geometric figure.

Figure 29 a) gives an example, the Material figure will be that of a post rotary machine with triangular paddle and double arc cylinder. However, as we have shown in b) the Geometric figure will be that of a retro rotary machine, if the machine would be produced with a paddle of the same number of sides.

As we have already mentioned, if we understand the thing from the mechanical point of view, we could to the contrary say that the material figure is the second, since the mechanic allowing the support of the paddle will necessarily be that of the Geometric figure. As before, if we adjust, at each phase of its unfolding, the cylinder with the corrected angle , we'll obtain a rotary cylinder, which will allow the conjunction of Material and Geometric figures, which we'll name the synthetic course. A material figure of post rotary triangular paddle with double arc cylinder machine will be realized simultaneously to the (virtual) Geometric form of a triangular retro rotary machine. As in the first case, this figure is located in the area of differential anterior machines. In the present example, like the precedent, the post rotativo mechanical induction machine is transformed into a retro rotary one, and this while conserving its greater combustion chamber. But the retro mechanic motivation of this machine will force a back push on the paddle, which will be corrected in further examples and variations.

Figure 30 re-exposes the continuation of the positions of a translational movement machine , with the help of Geometrical Figure, what will confirm the originality of this basic kinetic. As we can state, the originality of this type of machine is to describe a limit point between two areas of the scale of rotary machines. In this point, we find the following particularity, that the number of paddle sides is identical to that of the Geometric cylinder.

Figure 30 a) shows that the successive explosions or compressions take place, in fact, for example here, on each side of a triangular Geometrical Figure . Figure has mostly a theoretic dimension and shows that the number of real sides of the paddle is equal to the number of sides of the virtual cylinder, in what consists of the originality of the machine, due to it not being able to be realized strictly in it's real form.

Figure 30 b) shows the kinetic of Geometrical realization

Figure 31 shows that we can inversely diminish the number of sides of the Geometrical Figure in relation to the standard figure, which implies, in the measure where the compressions will be successive, that we'll realize a differential posterior virtual form.

Figure 31 a) shows that here, consequentially, we will realize a machine of post rotary triangular paddle and double arc cylinder of real form.

Figure 31 b) shows that it will be in such a way as to virtually realize a post rotary machine of a single side . This realization allows, to all practical means to subtract the crankshaft, realizing the compressive parts strictly in a rotary way.

Figure 36 c) shows dynamically this realization, that will produce, like we can see, this time only on compression by turn

Figure 32 resume the two precedent figure and shows that that consequentially we can, by adding or subtracting from one side of the Geo metrical Figure , transfer a post rotary machine, in retro rotary machine and inversely. Here, the same post rotary machine with

triangular paddle can become a synthetic post rotary machine with one sided virtual cylinder, or retro rotary synthetic, with a four sided virtual cylinder.

Figure 33 shows generalize the precedent figure and shows that the same process true for all figure forms.

Figure 33 a shows for example, for a triangular paddle machine both Geometrical figure of one side les or more. In that figure, we show that the trochaic paddle, with its double arc cylinder may be dynamically produced to realize a single compression machine, also of post rotativo type or a retro rotary Geometric figure machine, of a retro rotativo type.

Figure 33 b) shows the same process, but for a square paddle machine,

Figure 33 c) shows the same process, but for a five sided paddle machine.

Figure 34 shows that the process is true for either post rotary Material Figure and retro rotary Material Figure .

In figure 34 a) we have here, as an example, in a, a square paddle post rotativo machine, working in a material triangular cylinder. This machine may have a dynamical motivation realizing a double arc post rotary Geometrical figure, or a five sided retro rotary Geometric figure

Figure 35 shows that Number of sides pof geometrical figure is not limited to the counter type of material figure. Turbinative dynamic are breaking the rules of sides of the anterior art. In fact, her we can se here, for a trochaic paddle and double ar cylinder material Figures, we can produce here, as an example, in a, a five sided paddle post rotativo machine, working in a square material cylinder. This machine may have a dynamical motivation realizing a triangular arc, post rotary Geometric figure, or a six sided retro rotary Geometric figure

Figure 35 a) the material figure of the machine , trochaic paddle, and post rotary cylinder form , here in double arc

Figure 35 b) shows the pentagonal Geometrical figure of the machine

Figure 35 c) shows that the kinetic realizations of the Geometrical Figures are also true for retro rotary machines as much as post rotary. In a) we can see a post rotary machine realize a retro rotary form of a Geometric square cylinder figure

It is important to note that in all the previous examples, the Geometric figure, The figure of sequence of its realization of the geometrical figure, and the Figure of displacement points of the ends of the paddle are similar, and simultaneously different from the material figure. We will see that when we get out of the complementary post and retro rotativo material and geometric figures, the Figures of displacement or the figure of sequence of realization will be modified.

Figure 36 shows that the process showed at the last figure may be realized in both sides. The figure shows the compression in relation to the standard motion.

Figure 36 a) shows the standard motion and the positions of compression.

Figure 36 b) shows the emplacement of the compression, which are exactly conform to the geometric figure exposed at previous figure . The figure shows the successive realization of the sides of the geometrical figure . Like we can observe, in a, the moment of the explosion is in a 1. In b, the successive explosions are in b1, b2, b3, b4

Figure 36 c) shows the emplacement of the compression in c, c1, c2, c3, c4., which are exactly conform to the geometric figure exposed at precedent figure , with the exception that in that figure, all the components are working retro rotationally

We'll note in b, as in c, that the cylinder is displaced in the same direction as the paddle, one in a retro rotary movement and the other in a post rotary movement and this is why we'll call these dynamics of compressive type. This is why we'll say that the machine produces a differential force only between its parts. However, as, the location of the next compression passes that of the next standard compression, we'll say that this machine is differential posterior.

Figure 37 shows what is happening when the geometrical figure is realized by successive sides, and when the number of sides is higher that the counter form cylinder.

Figure 37 a shows the kinetic of a pentagonal Geometric figure, and shows the displacement of the point situated on the end of the paddle, from witch we will realize the Displacement figure ..

Figure 37 b shows the Material figure, the Geometrical figure, the Sequential figure, and the Displacement Figure for this kinetic. Like we can see in that figure, when , for a material figure 2101 , the realization of the Geometrical figure 2105 is produced by successive sides, 2102, the displacement point is different from these figure, and each point of the paddle will realize is ione directional Figure of displacement., here, an elliptic figure 2102.

Figure 38 is showing an other example, with a six sides Geometrical Figure.

Figure 38) Shows the material the material Figure, The geometrical figure and the sequential figure

Figure 38 b) is adding the Displacement figure Like we can see, when the paddle is realizing successively 2103 the sides of the Geometrical figure ,. The figure of Displacement point 2102 will be complex, and the machine will have vibration.

Figure 39.1 shows that in reality, we can realize, for a same Material figure, all the base geometric figures as Geometric figures. For example, here, for a post rotary machine with triangular paddle, we can realize, as we have already shown, a figure with a lower number of sides, thus posterior differential, or with a higher number of sides, being triangular, square, hexagonal, and so forth. Figure shows that in reality, we can realize, for a same material figure, all the base geometric figures as virtual figures.

Figure 39.1 a) is showing the Material Figure of trochaic paddle and double arc cylinder

Figure 39.1. b, shows the number of sides of the Geometrical Figure may be decreased , here to one side

Figure 39.1. c , shows that the number of sides of the geometric figure is not limited to only one side or more, like in the previous example. The figure shows that the dynamic process allows us to liberate the construction of the machine from its strict side-relationship of the art. Here the Geometrical figure may have, as we can see, four , five, six seven eight sides or more.

Figure 39.2 shows that this is true for all figures, and gives the example of a post rotary square paddle material form, and that this is true for all figures.

Figure 39.2 a) shows an example of a post rotary square paddle material form, a square paddle moving in a triangular cylinder, which constitute a post rotary material figure.

Figure 39.2 shows in b , we see that we can decrease the number of sides of the Geometric figure to two , and to one.

Figure 39.2 shows in c, that the geometric figure can also have a superior number of sides than that of the Material figure, which will produce different kinetics with more explosions. Like we said before, when the geometric figure is the same as that of the paddle, we obtain a translational kinetic.

Figure 40.1 shows that we can realize the Geometric cylinder of a machine by realization of each of its faces, non successively, by jumps. We have noted that it was extremely interesting to realize a a higher number of faces of the Geometrical figure, because the machine was able to produce a higher number of explosion , and that with a simple paddle and cylinder. But, we realized that when we realize the machine with a higher number of sides, we were realizing in the mean time a higher retro rotation of the paddle on its crankpin, and we were losing the translational displacement of the paddle, and its vertical expansion. That problem may be resole in realizing the Geometrical figure by step, and not by successive way.

For example, we could, for a triangular paddle post rotary type machine, realize this machine by localizing each compression by jumps of eluded faces. In the current example, we organize the paddle dynamic in such a way so that not only it realizes an eight sided virtual figure, but in addition that it doesn't pass to successive paddles, but

rather by jumps of two eluded faces at a time. The paddle will thus be closer to its (virtual) figure by passing through the following series of faces: I, IV, VII, II, V, VIII, III VI . It is why we have named the figure of the sequence by witch the Geometric figure will be realized , the Sequential figure of the geometric figure.

Figure 40. 2 gives the continuation, for a rotation of all compression and expansion positions of the paddle. It is important to make a few of the following commentaries. The first consists in mentioning that the realization of this virtual figure allows many explosions per rotation, which would only be realizable normally by an eight sided figure, which consequentially would give but small explosions. The second consists in saying that, this done, we succeed in placing each successive compression in the (contrary movement zone. In fact, if we observe the unfolding of the sequence of the paddle and cylinder, we notice that they work in opposite direction, which assures to the machine, by a contrary directional force, an important motor power. A third observation consists in noting that the movement of each of the compressions and expansions is alternative, and can be assimilated by the step sequential movement, or even to a multi translational successive movement, already commented movements by ourselves for piston machines, and which find here its realization for rotary machines. This movement which can be assimilated to a successive translational movement allows an expansion more towards the center than in standard rotary machines, in which the expansion pivots around the center before realizing it. The expansion, here, in addition, will not take three quarters of a rotation, as in rotary machines, but only a quarter rotation. The machine could therefore be easily realizable of four time by choosing the even sequences for the explosions and the odd sequences for the admission or evacuation and vice versa. This figure shows that the Geometric figure of eight sides is formed alternatively, and that the sequence of each of these compressions 50 , is following, as decrypted at the last figure, side numbers 1, 4,7,2,5,8 ,3, 6 . So to stay in contrary motion, the paddle needs to realize here the Geometric form by steps of two sides.

The Sequential determination of the Geometric figure is consequently just as essential to the machine as the Geometric figure and the material form , because it determines the emplacement and the order of the peak of expansion and compression. Without the Geometric component, the machine may be, like we said, functional at the level of its compressive parts, but dysfunctional in relation with the bloc of the machine. The same is true for the sequential dynamic components of the machine. Only some of the sequential realization are pertinent for engine realization. They mostly stay near the translational figure, the most they will be interesting. The sequence of components is strictly necessary to organize the govern of ignition, and valves opening and closing,

Fig 40. 3 is summarizing the dynamic of the precedent figure, witch allows the realization of a contrary movement of the cylinder and of the compressive part, such as we have previously shown for rotor cylinder machines. But here, we only represent the figures that corresponds to the succession of the compressions of the machine. We'll note in fact that in this figure a planetary post rotary movement of the paddle and a retro rotary cylinder movement, and that consequentially, these two parts realize a movement which is said Motor, or contrary movement 211.

Figure 41 shows that, since the course of the non successive faces are possible, the continuation of the Sequential courses, or Sequential realization of the geometrical Figure, which we'll also name Sequential courses, are multiple for a same Geometric figure. For example, here, we show that various virtual paddle courses allow the realization of a five sided Geometric figure for a post rotary three paddle sided material figure.

Figure 41 a shows the Material Figure

Figure 41 b) shows the following figures, we'll show that according to the chosen Sequential course for the same real and virtual figures, we realize very different machines, since certain of them are located in the area of differential anterior machines, others in the area of contrary machines, and others in the area of differential posterior machines.

Figure 42.1 thus enlarges the construction rule of the rotary value of the cylinder by stating that we must take in account of not the Geometric figure, but of the Sequential course of realization of this figure. Consequentially, the degree difference of the first successive material and Geometric compressions, and its angle, will be applied to the cylinder.

In 42.1 a , we compare the emplacement of the next compression in Translational engines, which occurs after 120 degrees of rotation of the eccentric , to the emplacement of the next compression occurring in a standard motion machine, so after 180 degrees.

Figure 42.1 b shows that if the emplacement of the next compression is successive, like the Kinetic presented in c, it will occur after 72 degrees , and the machine will be less translational. To realize the machine in a more translational way, it will be preferable to realize it in a Step Sequence, which will make the next compression occur after 144 degrees, so between the number of degrees of the standard one and the perfect translational one. So we see that the Sequential component is absolutely important and necessary to guarantee the more pertinent realization of the machine, in its engine form.

Figure 42.1 c , shows the kinetic of a successive sequential five sides geometrical figure of a trochaic palled and double arc cylinder.

In the example of the current figure, the five sided (virtual) Geometrical figure is realized successively, which forces the displacement of the paddle and the cylinder in the same direction, and realizes a differential anterior machine.

Figure 42.2 realizes the preferable motor realization of the same Material and Geometrical figures than the precedent figure, but this time, not in successive course, but by an alternative Sequence course or alternative Sequence of realization of the Geometric figure , in which the jumps will be realized in such a way as to be located in the contrary area of the machine. Here, we elide consequentially a virtual face to each

compression. Such as shown in b, the machine follows the sequence; I : 1 , III : 2 , V : 3 II :P 4 , IV :5

We must therefore characterize the machine according to its Material form, Geometric form, and of Sequential criteria. We could say that this machine is of type P 3/2 ; 5 ; 1: contrary , which will signify that the machine is post rotary, of three sides to two, of five sided virtual cylinder, and a jump of one elided side. We could even specify the contrary aspect.

Figure 42.3 shows the same real and virtual forms, but, once again with a different synthetic course. Here, the jump is of two, and the sequence is thus the following ; I :1 , IV : 2, II : 3 , V 4 , III 5

As we can state, it is not as much the Geometric form which will define the surface of the machine, but the Sequential course on this form. Here, the Sequential course makes the first explosion appear, being located in an area or in a zone that is situated over the zone of the point of the explosion during the standard realization, anterior and at point zero, the machine is thus differential posterior, and such as we can state, since the cylinder and paddle are acting in a post rotary way , witch is in *the same direction*, the power is reduced, since there is a mechanical contradiction with the unique direction which must have an explosion. This is proving one more time that the component of Sequential figuration has to be respected for engine construction.

Figure 43.1 summarizes the three previous figures and concisely puts in dregs the Sequential course and the belonging of a realization to one area or another.

Figure 43.1 a) shows that we have a successive course, in which the first compression is located in the differential anterior area.

Figure 43.1 b) shows the Sequential course realizes a machine having its explosion in a better area, area said contrary area and will be of motor category. In this kinetic, the next explosion will occur between 180 and 120 degrees, witch are the degrees of explosion of the standard engine and the translational Turbinary engine.

Figure 43.1 c) , shows the machine realizes a Sequential course in which the first compression is located in the differential posterior area , here, over the 180 degrees of the standard rotary engine. The machine will be compressive.

Figure 43.2 shows the differences of the Sequential Figure and the Displacement figure when the sides of the Geometrical figure are realized successively and by alternative steps.

Figure 43.2 a) shows that when a material figure is realized with a number of sides of the Geometrical that is superior to the counter type form of cylinder, the Displacement point figure is realize alternatively, and the figures doesn't the have same orientation. Figure shows that when the number of faces of the geometric cylinder is augmented , and that

the sequence of realization of the Geometric figure continues to be realized by successive sides, the figure of displacement of points 3000 is different for each point and different from the geometric figure 3001 .

Figure 43.2 b) shows that for the same Material and geometrical figures, if the Sequential figure of realization of the geometrical figure is done by alternative steps, the displacement figure is successive, what will make the machine easier to balance. Figure shows that, inversely, when the number of sides of the geometric figure is augmented, but at the same time, the figure of realization of the geometric figure is realized by steps, the Figure of displacement of points, here , of the ends of paddle , stay similar for each end 3003, and is similar to the geometric figure 3004.

Figure 44 a) shows that certain figures, in which the number of sides is even and low enough, bring back inferior figures. For example here, the Geometric six sided cylinder allows a sequence of successive faces .

Figure 44 b), shows however the sequence with a jump, makes us fall back on the (translational Turbinary dynamic,

Figure 44 shows in c whereas the sequence with two jumps, makes us fall back on the standard dynamic.

Figure 45 shows various Sequential Figure courses of seven sides for a post rotary material figure with a three sided paddle. We can find here, from one to seven for each figure, the succession of compressions. As before, the first synthetic courses will take place in differential anterior machines, the sequence with two eluded faces will make way for a contrary movement of first degree of liberty machine, and the other sequences, differential posterior machines.

It appears that the third one, in which the Sequential figure is realized in the following order, I : 1 , IV: 2 , VI. 3 III : 4 V: 5, II: 6 would appear to be the nearest to the translational Turbinary one, but this time would realize six compressions instead of three . So this machine would be interesting to build.

This exposition of the various ways to realize the Sequential realization of the Geometric form shows the absolute necessity to consider the Sequence of realization as a specific and necessary component of the machine.

Figure 46 shows various real courses of a virtual eight sided figure for a post rotary material figure with a three sided paddle. As in the previous figure, we can distinguish the synthetic courses which will make way for differential, anterior or posterior machines or contrary compressive parts motion machines, producing the motor effect.

As we showed at figures 40, 40.1.1, 40.1.2 , the third Sequential way to produce the machine appears to be the preferable one, because the area of the next compression is

situated between the standard and translational Turbinary one. As we can see, this kinetic is only possible if the Sequential figure is realizing the Geometric figure by steps.

Figure 47.1 shows that more the number of sides increases, more the number of possible courses increase, and consequentially of contrary compressive part courses. Here, the first Sequential figure is realized in a nine sided Geometric figure, by steps of four sides. As we can see, the sequence of it is the following : I : 1 , V : 2 ' IX : 3 ' IV : 4 , VIII : 5 , III : 6 , VII : 7 , II : 8, VI : 9 . In the next Sequential figure , we have the same as the one of the third figure of 45

In the next sequential figure, the geometric figure is a figure of fourteen to fourteen sides for a real post rotary figure with three sided paddle. As we can see, to different Sequential figure may the machine be realized in conformity to the preferable contrary zone, and , witch to the nearest kinetic to the translational Turbinary one.

The second sequential process area presented is the following :

I : 1 , VI : 2 , XI : 3 , IV : 4 , V: 9 , VI : 2 XII : 7 XII 8 , VI 9 , X 10 XI 3 ,VIII 8

Figure 47.2 reminds that each material paddle figure has its specific area and that more the paddle has sides, more the (contrary area is restraint. But the logic is still the same. The area of the next compression is situated between the emplacement of the next compression of a standard engine, and that of the translational Turbinary engine.

It doesn't mean that it would be impossible to realize, outside of these areas, a machine that would have a high translational potential . This, in fact , is perfectly possible , if the dynamic is a little bit over that of the Turbinary motion. But, in that case, the type of gearing would change and not stay of the post rotary kind. It would necessarily be of a retro rotary kind, and for this reason would produce a positive rear effect and a negative post effect. These machines would be good engines, but not as perfect as the one which are staying motive by post rotary mechanics, with new ratios being, like we said in our disclosure, the ratios of the Geometric figure, or the ratios of the Sequential realization of it.

Figure 48.1 summarizes the final figures, and shows, in a single figure that many Geometric figures are possible for a same Material figure, and that many (Sequential courses, or figure of realization of the Geometric figure are possible for each (virtual) Geometric figure.

Figure 48.2 shows, for a rotation, this time, a material post rotary figure of four and three sides of paddle and cylinder, realized on a ten sided virtual structure. Figure 48.2 a shows the material figure

Figure 48.2 b shows one preferable kinetic, in which a Geometric form has ten sides, and where the Sequence of its realization in by steps of two sides. This will ensure that the next compression will be between the standard and translational locations.

Figure 48. 2 c shows the kinetic realization of one machine, producing ten compressions by turn.

As we can see, the Sequential realization of the ten sided Geometric figure is realized by a three step Sequential motion. The entire sequence is the following I: 1 , IV : 2 VII : 3 X : 4 III : 5 VI : 6 IX : 7 II: 8 V 9 VIII :10 , the roman numerals being the numbers of the sides of the Geometric figure.

In that example, we can see that the next compression has an angle, at the same time near the translational Turbinary one, but in which the retro rotation of the piston is a little stronger. So, it will stay near the translational motion, but it will be necessary to mechanize it with a retro rotativo mechanic.

The synthetic course by jumps of three faces allows to realize the first compression and explosion, and the following, near the translational Turbinary one. The better Sequential shape for the Geometric figure would have been by four steps, but in this case, five compressions would return the piston to the start point. So , in this case, the chosen process is not a bad solution. we can state, we realize 10 compressions for each half rotation of the paddle, and third of rotation for the cylinder, and consequentially, if the machine is realized in four times, ten explosions per paddle rotation, which corresponds to a piston engine in V with twenty pistons, being practically three V-8's, or two V-12's.

Figure 49.1 shows, inversely, that many Material figures , here successively, a six sided, four sided and five sided ones, are possible for a same Geometric figure, and that each will possess a preferable contrary motion of compressive parts area.

Figure 49.2 shows the scale of position of the next compression for a three sided paddle, two sided cylinder material figure machine. We can see the differential anterior areas, being realized when the explosion comes before the Translational moment of the next compression of the machine, and after the strictly rotational kinetic, so between the 212 and 213 points of the schematic circle of comparison. In that case, the eccentric , for a trochaic paddle has to turn less than 120 degrees 222 , and more that zero 219 . The figure presented in 42.1 is an example of the various possibilities of this situation. We can see differential posterior areas, being realized when the moment of explosion is posterior to the moment of standard explosion.. The eccentric will turn more than the 180 degrees of a standard machine 225 to obtain a perpendicular situation of the paddle towards the eccentric, and thus the maximal compression . An example of that kind of kinetic has been presented at figure 42.3 , and less than the zero point 218 Finally, we can see the contrary motion of compressive parts areas, being realized when the location of the first explosions is realized between the Translational Turbinary and standard locations 216 , beginning at the successive points of position of the paddle for the explosion , Translational, and standard motion. 213 and 214.. Examples of that type of kinetic are given in figures 40.1.1 , and 42.2 Finally, the area in which the paddle and cylinder are strictly rotational, and in which the next compression happens at the same top place 215 , 0 degrees 220 is the neutral position. 214 . These different areas may

also be defined in relation to the displacement of one of the points of the paddle, here by the points 212, 213 , 226, 217

In resume, the figure distinguishes, group of scale realizations for differential retro rotary, post rotary, and contrary motion of compressive parts machine, for a machine which is Geometric and Sequential figure . This scale is composed of the following main points, being that of rotary paddle and cylinder machines, clockwise cylinder machines, planetary rotor cylinder machines. The inter phases between these points constituted the differential parts, or differential posterior of these machines. These statements constitute an certain advance in the knowledge of these machines, which anterior would only be constituted of two polar possibilities, being the strictly point, and the standard point, which we'll call the fifth point. The addition of the clockwise point, which we'll call the third point, allows not only to constitute the areas of these machines, but also to realize a rational progression between them, as in the scale of colors, the diatonic musical scale, or in other scales. The parts do not understand themselves successively, discretely, and isolated, but rationally, by their relations to a same fundamental, the point zero. In addition, from the dynamic point of view, the realization of a machine according to its synthetic course, therefore, not only simultaneously virtual and real, rationally speaking, and in the Hegelian or Cartesian sense of the term. In these cases, the mechanical logic resembles the arts, since it allows to realize understanding links from material data, which finally are more real than the data itself.

Figure 50 shows that these degrees are reversed for retro rotary Turbinary machine

Figure 50 a) shows the different area for post rotary Turbinary engines

Figure 50.2 shows the different areas for retro rotary Turbinary engine

Figure 51 shows the mechanical specifications of these machines. We can generally say that the paddle part of these machines could be activated by mechanics similar to the mechanics of Translational Turbinary movement machines, taking in account however to realize the paddle movement in such a way so that it produces the movement of the Sequence of the Geometric, or Geometric figure only , and material figurations, depending if the machine is produced in Alternative Sequential kinetic, or by successive Geometric figure and materially if it produces successive compressions. 2001 .

Because we normally found when the machine is realized in its basic degrees, a rotary cylinder will always necessarily have to realize its rotational movement by a semi transmittive induction. 2002

In all the cases, we'll realize ranged crankpins of the machines in such a way so that their length is equivalent to that of material figures, when realized in a standard way, and also in such a way so that they realize rotation and retro rotation ratios of virtual or real figures depending on the case.

For example, in the case of the mechanization of figure 42.2 and 45 , we'll realize the machine with the same crankpin length as the post rotary material figure with a three sided paddle and two sided cylinder.

In addition, we'll realize mechanics of the figure 42.2 with the help of a retro rotary mechanic, limiting that of a five sided cylinder machine, increased the number of supplementary degrees to fill by the triangular and non square paddle shape. In standard mechanics, the eccentric is turning 180 degrees for 120 degrees of the rotation of the paddle on its crank pin, which is producing the post rotary type of a 2/ 3 gearing ratio. In translational motion, the eccentric is turning 120 degrees for a retro rotation of 120 degrees of the paddle on its crank pin, which is realizing the 1/1 ratio which we defined before. In this example, if the next compression is occurring on the next side of the geometric figure, the eccentric will have to turn 72 degrees for a retro rotation of 120 degrees of the paddle on its crank pin , so 120/72 ratio . The type of mechanical induction will be of a retro rotativo one, and of a gear ratio of 120 to 72 teeth.

Like we said at many places, we can conserve the post rotary type of the machine by realizing a Sequential movement of the paddle. For example, if here we realize the first explosion and the third face of the Geometric figure, we will turn the eccentric 144 degrees and realize a retro rotation of the paddle of 120 degrees. So this relationship will stay between the translational ratio of 1/1 and the standard one of 2/2, and will be of 120 to 144 . This will allow the conservation of the post rotary type of gearing and mechanical induction, and in this way, will keep the master action of the paddle on its front, and not on the back, like in the last example.

In the second example, we realized that if the next explosion occurs on the next side of the geometric figure, the ratio of the gearing will be of 120 /60, and the mechanical induction will be a rear effect mechanical induction, because it will be of a retro rotativo type. If the next compression is occurring on the second side of the geometric shape, one will realize a translational machine. If it is on the next side, it will be a standard machine. We have here good example of the great difference of using different Sequences of the same Geometric figure for the same material figure of the paddle and cylinder.

In the two cases, we'll note that this being done we greatly increase the poly induction, and increasing its reach, which has for effect to make positive even the back part of the paddle movement, which will not remain in simple blockage, but will act dynamically.

Figure 52 shows other examples similar to the last figure.

Figure 52 a), one can see that the mechanical induction of the paddle is of a semi transmittive one. In the first case, the semi transmission is realized with conical gearing, and in the second, with external and internal gearing. The two semi transmittive mechanical inductions produce a dynamic movement of the support gear in a retro rotation, and will in fact, modify the retro rotation ratios of the paddle, to bring in the relation with the Geometric, or the Sequential figure.

We ca see that the support gear is fixed rigidly to the cylinder, so that the cylinder will realize a retro rotation that will be of the same speed.

Figure 52 b shows the same thing, but with the difference that the semi transmittive mechanical induction of the paddle is realized to activate the support gear of poly induction mechanical means. This means that this will modify the standard course of the paddle into a Geometric or a Sequential one. Like in part a) of the figure, the cylinder will be fixed rigidly to the gear that is rotating with the axle of the poly induction support gear , so its rotation will be conform to the planetary Geometric paddle movement,.

Figure 53 shows a few other combinations among the hundreds possible. It is therefore important to state that the induction assemblies are exemplary. All of these inductions could be replaced by any other, depending on the case, standard, semi transmittive, ascending, or descending induction. It is therefore important to state that the induction assemblies are exemplary. All of these inductions could be replaced by any other, depending on the case, standard, semi transmittive, ascending, or descending induction.

Figure 53 a) shows that in I , we have a poly inductive semi transmission commanding the cylinder retro rotation, realized confoundedly with a fixed poly induction II, commanding the clockwise paddle action.

Figure 53 b) shows that In III, we have a poly inductive paddle action, and in IV a mono inductive descending action of the cylinder. In IV the action commanding the cylinder is semi transmittive with pinions.

Figure 53 c) shows the semi transmittive poly inductive V action commands the cylinder and the dynamic support gear of the ascending poly induction of the paddle, VI.

Figure 53 d) shows the ascending paddle poly induction VII leads a descending cylinder poly induction in BIII.

In Figure 53 e) , we shows a semi transmittive induction with pinion gears IX leads simultaneously the cylinder and the support gear of the ascending semi transmittive induction by hoop gear in X .

Figure 53 f) shows in XI, the dedoubled semi transmission leads both the cylinder and the central dynamic ascending induction gear by the central dynamic gear in XII .

Figure 54 shows other possible mechanics, which are once again taken from the previously exposed composition rules. It is therefore important to repeat that these induction assemblies are exemplary. All of these inductions could be replaced by any other induction, depending on the case, standard, semi transmittive, ascending, or descending. Here, in the three cases, the ascending induction is a poly induction.

Figure 54 a) shows that the poly induction gears 400 are supported on their support gear 401 and are coupled to a second series of gears which will be peripheral support gears 402. The crankpins, 403, supporting the paddle 404 will thus be coupled to induction gears by means of this second series of gears. They will activate in a retro rotary way the induction gear of the cylinder 405.

Figure 54 b) shows the poly induction activates the paddle 406, and is connected to a semi transmission by inversion pinions 407, activating the cylinder. In c, the original cylinder gear 408, is coupled to an internal gear 408, which allows to realize the cylinder in a planetary way.

Figure 55 is an example of Turbinary machine mechanization in which we use a poly inductive semi transmission in a, and a descending mono induction in b. We see the specific material organization of the machine, in which the paddle and the cylinder are dynamically included in the bloc of the engine.

Figure 56 shows a three dimension representation of the Turbinary machine eventually used as an engine. As we said in the disclosure, the Turbinary engine is realized in respect of the material from of paddle and cylinder of the art. We have also said that the complementary elements may be about the same, but, it will be important to realize their position in relation with the geometric or the Sequential figure.

Like we can see in figure 56 a), the machine has been planed to realize an eight sided geometric figure, and that in a sequence of two steps 3000 , like the one presented at 40 1.1 40 1.2. One can see that , like in all four stroke engines , the succession of exhaust 301 and intake 302 permit the realization of the compression, and at the end , the explosion , where the electric feeder cable will be disposed. 2003. The spark plug cable will successively pass close to it and receive the electrical charge, exactly like as in well known rotors of standard engines.

Like we said in the disclosure, the valves of the cylinder may be the same as the ones of the standard one. It is well known that, when these are single-sided, they are disposed in the wall of each side of the piston when this one is at its top motion. One of these valves is connected to the exhaust, and the other to the carburetor.

In the Turbinary engine, we say at several times that the cylinder was dynamically installed in the bloc and that the Geometric and sequential forms was permitting to know exactly where was the piston at any time of its course, and as well, the complicity relation of the paddle and the cylinder. It is evident that the holes of exhaust and admission haven't to be, in the well known time of the exhaust and admission, in front of holes disposed in the bloc at the pertinent geometric and sequential portion. It is evident that these holes will be as near as one another as the holes of the cylinder. One will permit the valve of the cylinder to communicate with the exterior and to realize exhaust. The other will permit the realization of the intake, and the carburetor will be fixed on it. It is also evident that it will be necessary to dispose on the cylinder a sealing part, and that kind of part is well known in rotativo valves.

Finally, this choice kinetic will produce, in four times, four explosions by turn. The spark plug, like we said in disclosure may stay at exactly the same position as in standard machines, in the cylinder. The spark plug itself, or an electric cable, will easily, like in distributors or in magnetos, contact the receiving cable several times in the same cycle.

The same thing is true for the cooling of the engine. When they will be used as engines, the bloc of the engine will be cooled, as a standard one. A fan fixed on the central shaft , at the exterior or the interior of the bloc, will propel the fresh air onto the compressive parts. The exterior cylinder, like standard air refreshed piston engines or rotativo engines are , will be refreshed by refreshing extensions

On another side, for strong applications, if internal coolant is necessary to the cylinder, the engine will utilize the same sealing technique as water pumps , whose are well known

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So , like we can see, the interest of the Turbinary engine will be, in its basic application for engines, pumps or compressors, do not require any new technologies. Constructors will simply have to adapt well known technologies to the new organizational disposition of the elements. But , it is sure that practical realizations will produce the need for several partial innovations for advanced versions. But the essential of the machine, in all its forms of application may be done without new knowledge, and simply with the well known auxiliary components.

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Figure 57 shows the semantic and theory gaps overcome by our works relative to planetary cylinder machines, there is directional error and omission or mechanical contradiction. In fact, the correct direction of these machines is complementary to the direction of their counterpart, and the mechanic must not be that of the figure, but in fact, that of its counter part. A correct comprehension of these elements allow, as we have shown, to realize the cylinder bi functionally.

J) Relatively to rotary paddle and cylinder machines, the direction of them must be inversed since according to the rule which we have given, the next expansion taking place in the same location, the paddle must realize a retro rotation of one hundred and eighty degrees. This reorientation of the machine allows to consider it as the octave machine of the chromatic scale.

K) The rotor cylinder machine realizes a paddle of virtual figuration of a square cylinder machine, and becomes by this fact, differential retro rotary, which lowers the motor capacity of the machine. The comprehension of this machine is incomplete, not only by the absence of general rules, but also from the absence of the clockwise machine movement, and also by the absence of the establishment of the virtual and real figures. As before, we note an absence of mechanization of this figure, which would have shown the retro rotary character, and requires semi transmissions, or other descending inductions. This figure is outside its chromatic field and remains isolated, differential anterior, without mechanics. As the most of the tentative in terms of rotary machines, it evokes the machine in the

compressive and not motor capacity, which gives it an inferior power, even to standard machines.

L) The lack of knowledge of bi inductive figures, figurative, being poly turbines, and dynamic, being clockwise paddle or cylinder movement machines.

M) The absence of establishment or of determination of the mechanical figuration or dynamic levels.

N) The absence of accelerative / décélérative mechanized dynamics

O) The absence of the establishment of chromatic fields.